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OCS Information Report
MMS 90-0013

Pacific Update: August 1987 - November 1989

ORIGINAL
COMPLETED

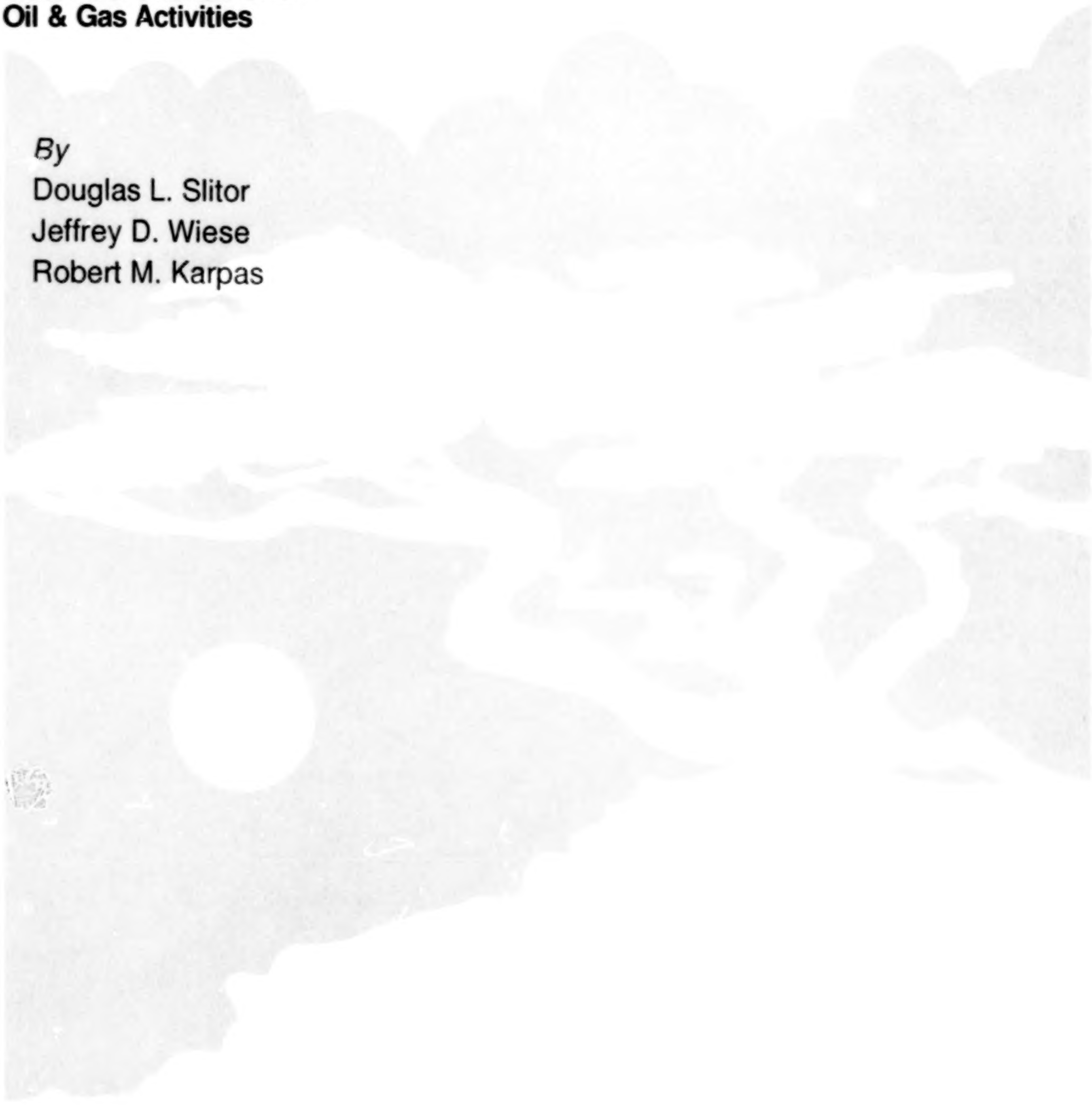
Outer Continental Shelf Oil & Gas Activities

MMS U.S. Department of the Interior
Minerals Management Service
OCS Information Program

Pacific Update: August 1987 - November 1989

OCS Information Report
MMS 90-0013

Outer Continental Shelf Oil & Gas Activities



By
Douglas L. Slitor
Jeffrey D. Wiese
Robert M. Karpas

U.S. Department of the Interior
Minerals Management Service
OCS Information Program

Herndon, Virginia
1990

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Preface

The Outer Continental Shelf Information Program (OCSIP) was mandated by the 1978 Amendments to the OCS Lands Act (43 U.S.C. 1352). To meet the requirements of this mandate, the OCSIP has made available two types of documents (summary reports and indexes) that have described oil- and gas-related activities in each of the four MMS OCS Regions: the Alaska, the Atlantic, the Gulf of Mexico, and the Pacific.

Many facets of the Federal oil and gas leasing program have changed significantly in the 10 years since inception of the OCSIP. In recognition of these changes, and in an attempt to reduce administrative costs, the OCSIP has recently modified its publications program and now produces the following documents:

- a streamlined, annual *Update* report for each of the four MMS OCS Regions (formerly the Summary Reports);
- a biennial *National OCS Compendium* that presents historical information on all of the OCS Regions;
- a map plate series detailing regional offshore and onshore information for the Alaska and Pacific OCS Regions; and
- an annual *OCS Directory* of Federal and State agencies and their OCS responsibilities.

To order any of these documents, or for more information about them, contact the OCSIP at the following address and telephone number:

OCS Information Program
Offshore Information & Publications
Minerals Management Service, MS 4610
381 Elden St.
Herndon, VA 22070-4817
(703) 787-1080 or (FTS) 393-1080

Abbreviations and Acronyms

A
ACOE - Army Corps of Engineers
APD - Application for Permit to Drill
ARCO - Atlantic Richfield Company

B
bbl - barrels
Bcf - billion cubic feet
BOE - barrels of oil equivalent

C
CCC - California Coastal Commission
CCORS - California Comprehensive Offshore Resources Study
CEQA - California Environmental Quality Act
CFR - Code of Federal Regulations
CSC - Cooperative Steering Committee
CZM - Coastal Zone Management

D
DOT - Department of Transportation
DP - development and production plan
dwt - deadweight ton

E
EIR - environmental impact report
EIR/S - environmental impact report/statement
EIS - environmental impact statement
EP - exploration plan
EPA - Environmental Protection Agency

F
FDP - Final Development Plan
FONSI - Finding of No Significant Impact
FR - *Federal Register*
FTS - Federal Telephone System

G
gal - gallon
G&G - geological and geophysical
GIMT - Gaviota Interim Marine Terminal

I
IMO - International Maritime Organization

M
MBOE - thousand barrels of oil equivalent
Mbpcd - thousand barrels per calendar day
Mbpd - thousand barrels per day
Mcf - thousand cubic feet
Mcfd - thousand cubic feet per day
MEMS - Marine Emergency Management Study
MMbbl - million barrels
MMbpcd - million barrels per calendar day
MMcfd - million cubic feet per day
MMS - Minerals Management Service
MP - Management Plan
MS - Mail Stop

N
NEPA - National Environmental Policy Act
NGL - natural gas liquids
NMS - National Marine Sanctuary
NOAA - National Oceanic & Atmospheric Administration
NOIA - National Ocean Industries Association
NOS - National Ocean Service
NRDC - Natural Resources Defense Council

O
OCRM - Office of Ocean & Coastal Resource Management
OCS - Outer Continental Shelf
OCSIP - Outer Continental Shelf Information Program
OPD - official protraction diagram
ORAP - (Wash.) Ocean Resources Assessment Program
ORMP - (Oreg.) Ocean Resources Management Plan
OS&T - offshore storage and treating

P
Pactex - Pacific Texas Pipeline
PAOS - Point Arguello Offshore System
P.L. - public law
POPCO - Pacific Offshore Pipeline Company
PRESTO - Probabilistic Resource Estimates—Offshore
PWSA - Ports and Waterways Safety Act

S
SALM - single anchor leg mooring
SCPS - Southern California Pipeline System
SEIR - supplemental environmental impact report
SEIS - supplemental environmental impact statement
SEMP - Socioeconomic Monitoring Program
SLC - (California) State Lands Commission
SOP - Suspension of Production
STEP - Sensitive Tract Evaluation Process
SWEPI - Shell Western Exploration & Production, Inc.
SYU - Santa Ynez Unit

T
TSS - traffic separation scheme

U
Unocal - Union Oil Company of California
U.S. - United States
U.S.C. - United States Code
USGS - United States Geological Survey

W
WOGA - Western Oil & Gas Association
WSPA - Western States Petroleum Association (formerly WOGA)

English-Metric Conversion

Measurements in this document are reported in the format that reflects the most common usage. The following table provides the factors for converting measurements to either U.S. Customary units or the International System (SI) of metric units.

U.S. Customary unit	***(multiply by to obtain)***	***SI Metric unit***
inches	2.54	centimeters
feet	0.3048	meters
statute miles	1.609	kilometers
nautical (geographic) miles	1.852	kilometers
acres	0.4047	hectares
barrels (U.S.) petroleum	0.15897	cubic meters
gallons	3.785	liters
cubic feet	0.02832	cubic meters
tons, long (deadweight)	1.016	metric tons

SI Metric unit	***(multiply by to obtain)***	***U.S. Customary unit***
centimeters	0.3937	inches
meters	3.281	feet
kilometers	0.6214	miles, statute
kilometers	0.400	miles, geographic (nautical)
hectares	2.47105	acres
cubic meters	6.290	barrels (petroleum, 1 bbl = 42 gal)
liters	0.2642	gallons
metric tons	0.9842	tons, long (deadweight)(2,240 lb)

NOTE: Distances on the Federal Outer Continental Shelf and on land are measured in statute miles. Distances on the offshore State lands are measured in nautical (geographic) miles. Generally, coastal States were granted jurisdiction over offshore lands to a distance of 3 nautical miles from their coasts by the Submerged Lands Act (43 U.S.C. 1301, et seq.). The offshore jurisdiction of Texas and Florida (on its gulf coast side only) extends to 3 marine leagues (approximately 10.35 statute miles) for historic reasons.

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Introduction

The Federal Offshore Oil and Gas Program in the Pacific OCS Region dates back to 1963. Detailed information on the history of Federal offshore oil and gas activities has been compiled in a document entitled *OCS National Compendium*, available from the OCS Information Program (OCSIP) at the address listed in the Preface of this document. The OCSIP has published other documents that summarize various aspects of oil and gas activities in the Pacific OCS Region. See Appendix A (p. 77) for a complete listing of these reports plus other OCSIP regional and national reports and how to obtain copies. The Pacific OCS Region comprises that portion of the continental shelf that extends seaward from the 3-nautical-mile offshore Federal-State boundary to the 200-nautical-mile limit of the U.S. Exclusive Economic Zone.

For administrative purposes, the Minerals Management Service (MMS) divided the Pacific OCS Region into planning areas and subdivided these into areas mapped on either official protraction diagrams (OPD's) or leasing maps (see sidebar). The OPD's and leasing map areas are depicted in figure 1 on the next page.

A variety of factors have combined to slow the rate of exploration and development of the OCS nationwide. Chief among these factors has been the precipitous decline in the price of oil over the past decade. To help illustrate this point, figure 2 (p. 3) depicts the yearly average price over the past 9 years for several benchmark crude oils compared with the total number of offshore rigs working during the same time period.

OCS Leasing Maps and Official Protraction Diagrams

The MMS currently publishes approximately 500 maps and diagrams of the OCS of the conterminous United States and Alaska. These documents show approved subdivisions (OCS blocks) of the OCS intended for leasing purposes. The nearshore areas of Texas, Louisiana, and a small part of southern California are portrayed on OCS leasing maps.

These maps are based on extensions of onshore mapping grids constructed on various U.S. State Plane Coordinate System Grids. These grids are the Texas (Lambert) Plane Coordinate System, South and South Central Zones; the Louisiana (Lambert) Plane Coordinate System, South Zone; and the California (Lambert) Plane Coordinate System, Zone 6. The Channel Islands area of California is depicted on OCS leasing maps CA 6A, CA 6B, CA 6C, CA 6D, and CA 6E. Each map has a uniform system of numbering blocks. Whole blocks on California leasing maps contain 5,760 acres (2,331 hectares).

The remainder of the OCS is mapped on official protraction diagrams (OPD's) using the Universal Transverse Mercator (UTM) Grid System. A standard OPD covers an area of 1 degree latitude by 2 degrees longitude. Whole OPD blocks contain 5,693 acres (approximately 2,304 hectares).

Each leasing map or OPD bears a unique alphanumeric designator and, in most cases, the name of a prominent geographic or natural feature. Individual blocks, the basic leasing units, are uniquely referenced by leasing map or OPD number and a block number within that map or OPD number and a block number within that map.

All of the Pacific Region OPD's, except NM 9-7, NM 9-8, NM 10-7, NL 9-2, and NL 9-5, can be ordered for $2 each from:

Minerals Management Service
Pacific OCS Region
Public Inquiries Office
1340 West 6th St.
Los Angeles, CA 90017
(213) 894-2062

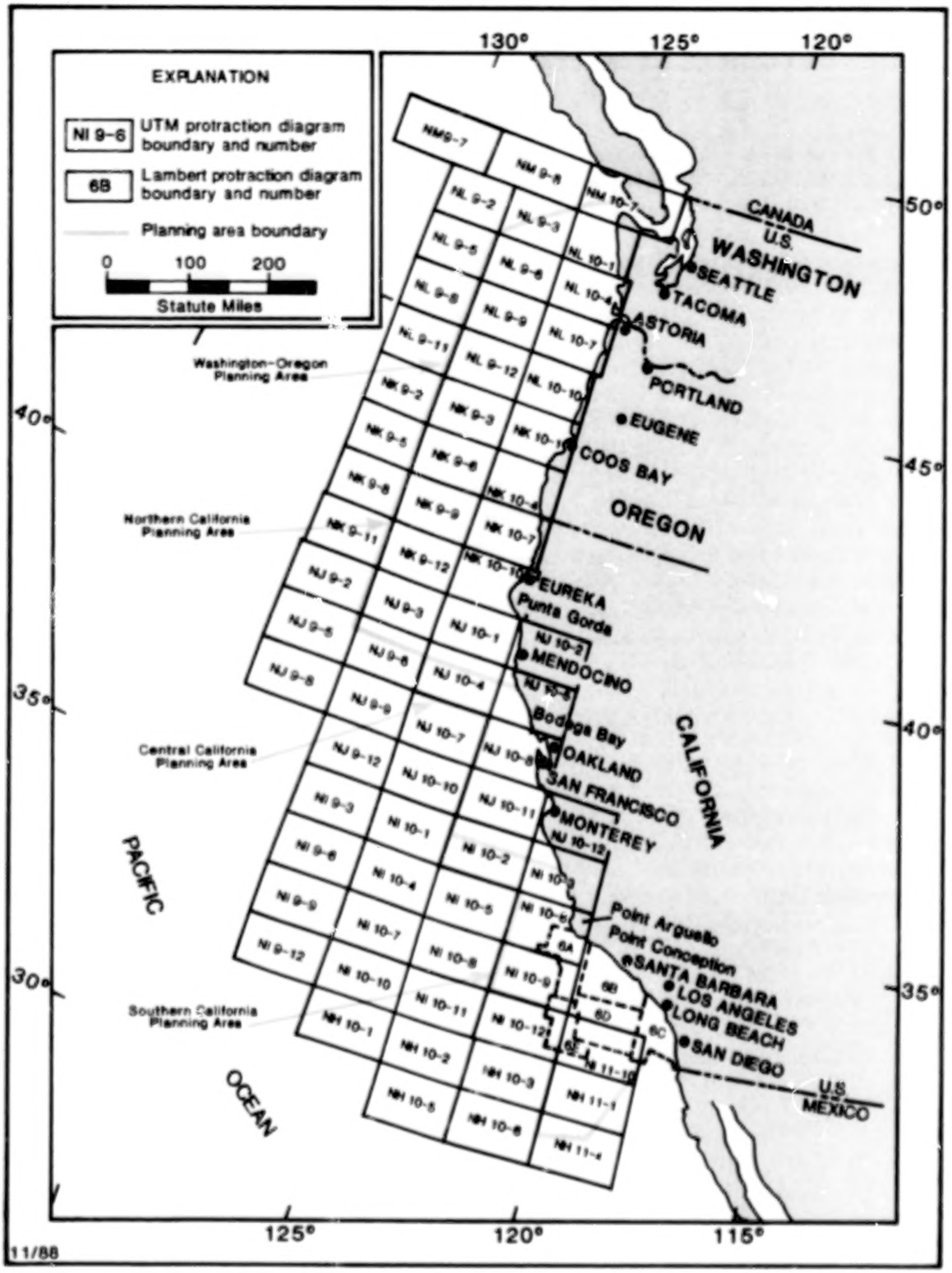

Figure 1. *Index to Pacific OCS official protraction diagrams and leasing maps.*

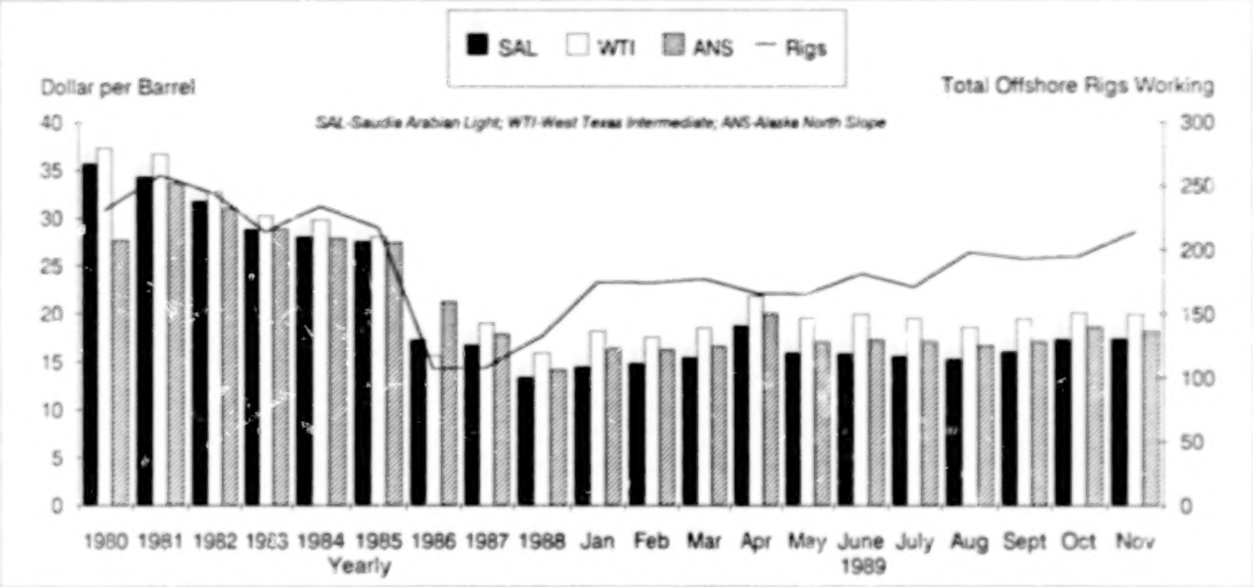

Figure 2. *Yearly average price for selected benchmark crude oils compared with offshore rig count, 1980 - November 30, 1989.*

Though some of industry's plans may have been delayed by oil price declines, the Pacific OCS Region continues to hold the interest of offshore operators not only for its offshore oil and gas resources but also for its potential deposits of nonenergy minerals. The last sale of oil and gas leases for OCS acreage was held in October 1984. There have been no corresponding sales in State waters since the 1968 State of California offshore lease sale.

Within State waters, no exploratory wells were drilled between August 1987 and September 1989 in any of the three States that adjoin the Pacific OCS Region. The offshore drilling that did occur in State waters offshore California was completed from existing platforms or islands. Several California State-water offshore development projects encountered obstacles during their permitting. ARCO's Coal Oil Point was denied; Unocal withdrew its application for Platform Hayley; and Shell withdrew its application for the Hercules project. Other related activity has been put on hold while the State Lands Commission (SLC) develops its Comprehensive Offshore Resources Study. This study was ordered by the SLC to help it evaluate the cumulative effects of exploration and development offshore California. In Oregon and Washington, similar studies were begun to (1) help them prepare for OCS Lease Sale 132, proposed to be held in April 1992, and (2) examine proposals for development of potential economic deposits of nonenergy minerals in State waters.

Three exploration plans were submitted to the MMS for approval during the period August 1987 to November 1989. However, the California Coastal Commission (CCC) denied consistency certifications for all three of these plans. The operator for each of these plans appealed the objections of the CCC to the Secretary of Commerce. The Secretary found that Texaco's exploration plan and National Pollutant Discharge Elimination System (NPDES) permit for lease OCS-P 0512 were consistent with the purposes and objectives of the Coastal Zone Management Act and deemed the plan consistent. The other two exploration plans submitted by Chevron and Conoco are still under appeal to the Secretary of Commerce. Nine exploratory wells were drilled on the OCS during this same period.

The Pacific OCS Region continues its trend towards gradually developing established OCS oil and gas finds. During the period of coverage of this report, the Santa Ynez Unit development project received final approval by all parties, allowing Exxon to commence construction of both offshore and onshore components of the project. The San Miguel field development project received approval of those portions of the project on the OCS. However, the San Luis Obispo County voters rejected the related onshore facilities, and, therefore, SWEPI is examining the possibility of processing crude oil in northern Santa Barbara County. Production of the Sockeye field began within the Santa Clara Unit from Platform Gail.

Lastly, the Point Arguello field's onshore development facilities received final coastal permit approvals from Santa Barbara County. But, the California Coastal Commission denied (on appeal of the county's action by Get Oil Out and the League of Women Voters) Chevron's coastal development permit for the processing facilities until Chevron adequately demonstrates that pipeline transport of crude oil is not feasible.

A separate oversized map plate entitled "Southern California offshore oil and gas activities and their onshore facilities" is available from the following address:

OCS Information Program
Document Distribution Center
Minerals Management Service, MS 4610
381 Elden St.
Herndon, VA 22070-4817
(703) 787-1080

1. Offshore Oil and Gas Resources of the Pacific Region

This Pacific Update focuses on the geology and petroleum potential of the Central California and Washington-Oregon OCS Planning Areas. The previous Pacific Summary/Index Report focused on the same for the Southern and Northern California OCS Planning Areas. See the "Additional Readings" section at the end of this chapter for more geologic information. This chapter also discusses the geological and geophysical programs of Federal and various State Governments and presents current estimates of offshore reserves and resources of crude oil and natural gas.

Geology of the Central California Planning Area

The Central California Planning Area encompasses approximately 15 million acres of the OCS adjacent to the California counties of Monterey, Santa Cruz, San Mateo, San Francisco, Marin, and Sonoma. Figure 3 depicts the geographic extent of both the Central California and Northern California Planning Areas and the geologic basins contained therein. However, the following geologic discussion focuses only on Central California.

The Central California Planning Area lies within the offshore portion of the Coast Range geomorphic province. Four basins are contained within this planning area: the northern portion of the Santa Maria Basin (also known as the Partington Basin), the Ano Nuevo Basin, the La Honda Basin, and the Bodega Basin. Most structural folds and faults trend northwest-southeast, as do the basins. Neogene sediments, including fine-grained calcareous and siliceous rocks of the Monterey Formation (the primary exploration target), are widely distributed over all the basins. Distribution of Paleogene and older sediments appears to be restricted to the onshore portions of La Honda and Bodega Basins.

Twelve exploratory wells were drilled in the Central California Planning Area in the 1960's: 10 in the Bodega Basin and 2 in the Ano Nuevo Basin. All of these wells were drilled on leases issued from OCS Lease Sale P1, which was held in 1963. Oil shows were encountered in both basins, but no commercial discoveries were made. All of the leases subsequently were relinquished. Some of the earliest production of oil and gas in California came from the onshore portions of the La Honda Basin. This production was derived from reservoirs of Eocene through Pleistocene age. The size and number of fields, however, proved to be small.

The primary source and reservoir rocks in the Central California Planning Area basins are in the Monterey Formation of middle and late Miocene age. Additional potential hydrocarbon sources and reservoirs may exist locally in the shales and sandstones of the younger (Santa Margarita Formation) and older (Mindego and Vaqueros Formations and late Paleogene section) rocks of the sedimentary section. These basins appear to be oil prone.

Geology of the Washington-Oregon Planning Area

The Washington-Oregon Planning Area encompasses approximately 47.9 million acres of the OCS between offshore extensions of

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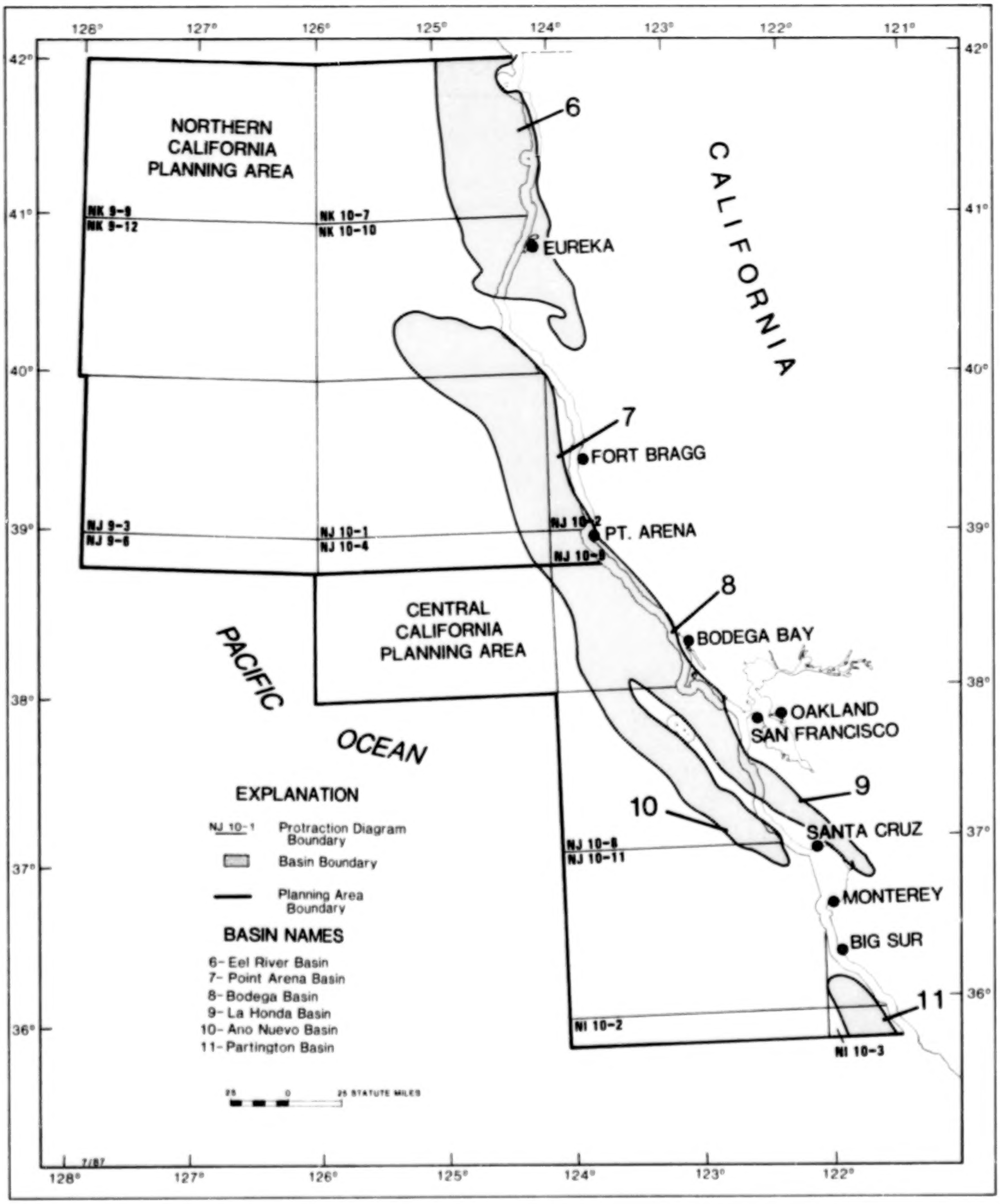

Figure 3. *Geologic features of the Central and Northern California Planning Areas.* (Boundaries and planning area limits depicted on this map are for initial planning purposes only and do not prejudice or affect U.S. jurisdiction in any way.)

Table 4. *Lease sale history for the Pacific OCS Region as of November 30, 1989*

Lease sale	Sale date	Area	Blocks offered	Acres offered	No. of bids rec'd	Blocks bid on	Acres bid on	Blocks leased	Acres leased	Total bonus leased blocks	Average bonus per acre	Existing leases
P1	05/14/63	C. & N. CA	129	669,777	70	58	312,975	57	312,945	12,807,337	41	0
P2	10/01/64	WA-OR	196	1,090,074	222	101	580,853	101	580,853	35,533,701	61	0
P3	2/15/66	S. CA	1	1,995	7	1	1,995	1	1,995	21,189,000	10,619	1
P4	2/06/68	S. CA	110	540,609	164	75	383,341	71	363,181	602,719,262	1,660	34
35	2/11/75	S. CA	231	1,257,593	166	70	384,540	56	310,049	417,312,141	1,346	4
48	6/29/79	S. CA	148	792,845	112	55	294,018	54	288,260	572,825,418	1,987	13
53	5/28/81	C. CA(2*)	111	603,613	301	81	432,815	60	320,579	2,088,881,824 (2)	6,388	38
68	6/11/82	S. CA	140	716,866	66	35	176,253	29	147,066	117,875,281	669	15
RS-2(1)	8/05/82	C. CA(*)	27	153,716	19	12	68,318	10	56,932	4,369,472	77	2
73	1/30/83	C. CA(*)	137	768,341	14	8	43,801	8	43,801	16,022,336	366	4
80	0/17/84	S. CA	657	3,147,352	30	25	125,100	23	114,367	62,121,252	543	12
		Totals	1,887	9,742,781	1,171	521	2,804,009	470	2,540,028	3,951,657,024	$1,556 (3)	123

(1) Lease Sale RS-2 statistics given only for tracts in the Pacific Region.
(2) The one-fifth bonuses (totaling $41,081,734) on 12 leases were forfeited by the companies in May 1984. This amount is included in total bonus figure.
(3) Average bonus per acre of total bonus leased tracts.
(*) Planning Area at time of sale was called Central and Northern California; all blocks leased are now within Southern California Planning Area.

peal. The remaining two were denied consistency concurrence by the CCC. The operators for each of these plans, Chevron and Conoco, have appealed their denials to the Secretary of Commerce. (For more details on these plans, see Exploration on p. 29.)

OCS Lease Sales Scheduled for the Pacific OCS Region

Six OCS lease sales remain scheduled under the July 1987 Final 5-Year OCS Oil and Gas Leasing Program for the Pacific OCS Region. In addition to these six OCS sales, three supplemental sales have been scheduled (see sidebar on Supplemental Sales on p. 28). To date, none of the supplemental sales on the schedule have occurred. Of the six scheduled OCS lease sales, three (128 in Northern California, 132 in Washington-Oregon, and 138 in Southern California) have had no prelease activities. Prelease activities for Lease Sales 91, 95, and 119 are on hold because of the OCS leasing moratorium resulting from FY 1990 Appropriations Act funding. This moratorium also restricts G&G activities using explosives or drilling muds.

In addition to those areas under a leasing moratorium, the DOI has deferred leasing for substantial portions of the rest of the Pacific OCS Region during the remainder of the current 5-year OCS leasing program.

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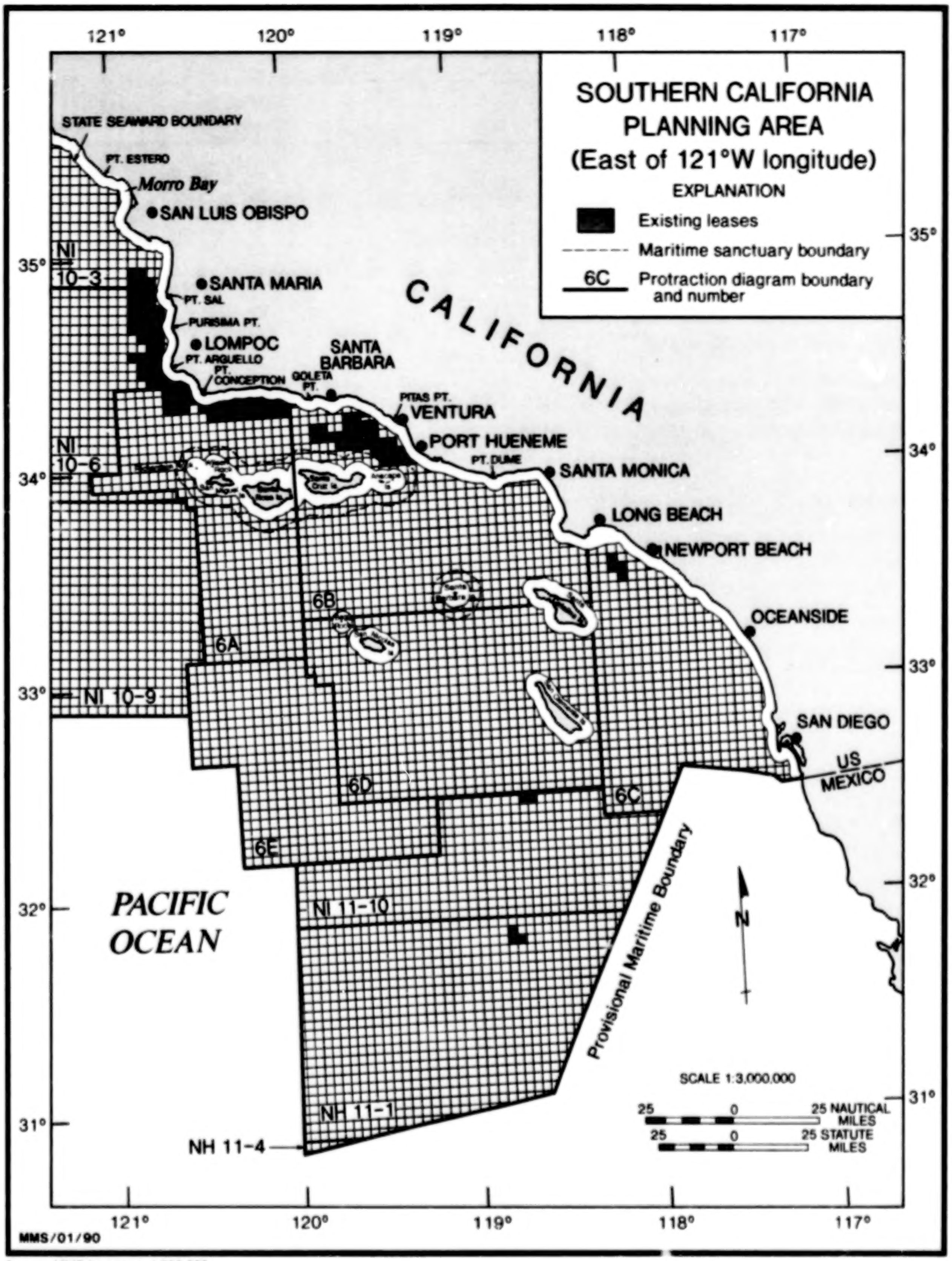
Table 5. *Dates of significant prelease steps for Pacific OCS lease sales as of November 30, 1989*

Lease Sale Number/Area	C	A	E	F	P	N	S
P1, CA	27 FR 867 01/30/62					27 FR 9734 10/02/62 27 FR 12228 12/11/62 28 FR 2288 03/08/63 28 FR 2509 03/14/63 28 FR 3218 04/03/63	Canceled 01/08/63 Canceled 03/13/63 Canceled 04/11/63 05/14/63
P2, WA-OR	28 FR 8328 08/14/63	02/19/64				29 FR 2562 02/19/64 29 FR 3819 03/27/64	10/01/64
S. CA						31 FR 14534 11/11/66	12/15/66
P4, S. CA	31 FR 16629 12/29/66					32 FR 20884 12/28/67	02/06/68
35, S. CA	39 FR 18 01/02/74 39 FR 4934 02/08/74	08/12/74	40 FR 15917 04/08/75	40 FR 34425 08/15/75		40 FR 51672 11/06/75 40 FR 52070 11/07/75 40 FR 52421 11/10/75 40 FR 55871 12/02/75	12/11/75
48, S. CA	41 FR 29440 07/16/76	01/18/77	43 FR 38944 08/31/78 43 FR 42312 09/20/78	44 FR 6213 01/31/79	44 FR 17583 03/22/79	44 FR 30770 05/29/79 44 FR 32048 06/04/79	06/29/79
53, C. CA	42 FR 60794 11/29/77	10/10/78 44 FR 26215 05/04/79	45 FR 26478 04/18/80	45 FR 58979 09/05/80	45 FR 71139 10/27/80 46 FR 12435 02/13/81	46 FR 23673 04/27/81	05/28/81
68, S. CA	44 FR 76867 12/28/79	45 FR 84878 12/30/80	46 FR 28951 05/29/81 46 FR 33110 06/26/81	46 FR 57763 11/25/81	47 FR 5177 02/03/82	47 FR 20517 05/12/82	06/11/82
RS-2, C. CA					47 FR 13983 04/01/82 47 FR 14961 04/07/82	47 FR 29151 07/02/82	08/05/82
73, C. CA	45 FR 79401 11/28/80	05/05/82 47 FR 58390 12/30/82	48 FR 9951 03/09/83	48 FR 29959 06/29/83	48 FR 31577 07/08/83 48 FR 36910 08/15/83	48 FR 50007 10/28/83	11/30/83
80, S. CA	47 FR 52790 11/23/82 47 FR 224?? 05/24/82	03/80	48 FR 29067 06/24/83	48 FR 54906 12/07/83	49 FR 22740 05/31/84	49 FR 36475 09/17/84 49 FR 38993 10/02/84	10/17/84
91, N. CA	51 FR 5496 02/13/86	51 FR 40522 11/07/86	52 FR 47764 12/16/87 53 FR 2892 02/02/88				Postponed
95, S. CA	50 FR 2630 01/17/85 52 FR 3881* 02/06/87 52 FR 25956 07/09/87 53 FR 46590** 11/17/88	52 FR 34725 09/14/87					Postponed
119, C. CA	53 FR 46422 11/16/88						Proposed 03/91
128, N. CA							Proposed 02/92
132, WA-OR							Proposed 04/92
138, S. CA							Proposed 06/92

C = Call for Information & Nominations & Notice of Intent to Prepare an EIS
A = Area Identification/Tentative Tract Selection (Public Announcement)
E = Draft EIS (Notice of Availability)
F = Final EIS (Notice of Availability)
P = Proposed Notice of Sale (Notice of Availability)
N = Notice of Sale
S = Sale
(*) Request for Comments on Mitigating Measures.
(**) Supplemental Call



Source: MMS basemap 1:750,000

Figure 8. *Existing leases in the Pacific OCS Region as of November 30, 1989.*

Table 6. *Total existing leases and acreage in the Pacific OCS Region, by location, as of November 30, 1989*

Location	Number of leases	Total acreage
Santa Barbara Channel		
Leases 0166 - 0241 (Sale P3, 12/15/66, and P4, 02/06/68)	35	179,656
Leases 0315 - 0367 (Sale 48, 06/29/79)	13	62,924
Leases 0456 - 0479 (Sale 68, 06/11/82)	13	62,325
Leases 0511 - 0527 (Sale 80, 10/17/84)	6	27,292
Total	67	332,197
South of Santa Barbara Channel		
Leases 0243 - 0311 (Sale 35, 12/11/75)	4	23,040
Leases 0480 - 0490 (Sale 68, 06/11/82)	2	11,386
Leases 0528 - 0535 (Sale 80, 10/17/84)	6	34,360
Total	12	68,786
Santa Maria Basin		
Leases 0373 - 0453 (Sale 53, 05/28/81)	38	202,672
Leases 0491 - 0502 (Sale RS-2, 08/05/82)	2	11,386
Leases 0503 - 0510 (Sale 73, 11/30/83)	4	22,716
Total	44	236,774
Grand total, all existing leases	123	637,757

The DOI has deferred leasing in each of the OCS planning areas as follows: 54 percent in the Southern California Planning Area; 89 percent in the Central California Planning Area; 91 percent in the Northern California Planning Area; and, 75 percent in the Washington-Oregon Planning Area. In addition, the DOI has highlighted another 8 percent of the Washington-Oregon OCS Planning Area for special consideration during the prelease procedures leading to OCS Lease Sale 132.

Leasing moratoria, permitting obstacles, and depressed oil prices continue to provide disincentives to the offshore industry. Beginning in August 1987, the MMS incorporated new Executive Branch initiatives to encourage exploration and development of the OCS. In particular, the minimum bid required for all blocks in OCS lease sales was lowered to $25 per acre from $150 per acre on a sale-by-sale basis.

Figure 7 (p. 19) showed the remaining prelease steps for each of the sales scheduled under the current 5-year program. Table 5 (p. 24) presented dates and citations for public notices on prelease steps that have already occurred for three of the six scheduled OCS lease sales.

OCS Lease Sale 91, Northern California

Proposed OCS Lease Sale 91, offshore northern California, was scheduled to be held in February 1989, but has been on hold. This sale is subject to the fiscal year 1990 Congressional Leasing Moratorium and is also being studied by the President's OCS Task Force. The task force report is due to the President January 1, 1990. The sale area covers 223 blocks, 1.1 million acres, ranging in water depth from 30 to 1,850 meters (100-6,070 feet) and from 3 to 27 miles offshore Humboldt and Mendocino Counties,

Table 7. *Top 25 companies holding interest in Pacific OCS leases, ranked by total acreage held, as of November 30, 1989*

Rank	Company	Number of leases held(1)	Total acres held(2)
1	Exxon Corporation	34	131,434
2	Chevron USA, Inc.	42	122,189
3	Shell Western E & P, Inc.	24	89,472
4	Phillips Petroleum Company	26	50,083
5	Union Oil Company of California	12	45,756
6	Sun Operating Limited Partnership	16	28,914
7	Atlantic Richfield Company	9	24,141
8	Texaco Inc.	12	19,148
9	Conoco, Inc.	8	18,762
10	Samedan Oil Corporation	17	17,909
11	Elf Aquitaine, Inc.	9	15,560
12	Exxon San Joaquin Production Company	19	13,021
13	Amoco Production Company	3	8,540
14	Amber Resource Company	10	6,276
15	Mobil Oil Corporation	2	4,584
16	Norcen Explorer, Inc.	3	4,278
17	Pennzoil Exploration & Production Company	3	4,261
18	Nippon Offshore California Oil Company, Ltd.	4	4,097
19	Idemitsu Oil Exploration (CA) Company	6	3,521
20	Mobil Exploration & Producing, N.A., Inc.	2	3,507
21	Union Pacific Resources Company	4	2,063
22	Santa Fe Energy Company	3	2,056
23	FMP Operating Company	2	1,958
24	OXY Usa Inc.	2	1,602
25	BP Exploration Inc.	2	1,599

(1) Number of leases in which company has a record title interest.

(2) Acreage totals based on percent of record title interest in leases held.

California. The Call for Information and Nominations and the Notice of Intent to Prepare an EIS were issued in the *Federal Register* in February 1986. The public scoping process included public meetings held in northern California and was concluded in December 1986. The draft EIS was issued in December 1987, and public hearings on the draft were held in February 1988. The final EIS cannot be issued until after FY 1990 and pending the results of the task force.

OCS Lease Sale 95, Southern California

OCS Lease Sale 95, proposed to be held in January 1990, has been on hold. This sale is also subject to the Fiscal Year 1990 Congressional Leasing Moratorium and is also being studied by the President's OCS Task Force. The task force report was due to the President January 1, 1990. The blocks proposed to be offered for sale are located between 3 and 130 miles offshore, in water depths from approximately 30 to 900 meters. The Call for Information and Nominations (which included 1,373 blocks) and the Notice of Intent to Prepare an EIS were issued in July 1987, followed by the Area Identification (which identified 1,317 blocks for further study) in September 1987. In November 1988, the MMS issued a Supplemental Call for Information covering 17 blocks excluded in the 1987 Call. The revised Area Identification has not been announced. As mentioned above, the DOI's FY 1990 Appropriations Act contains prohibitions on prelease and leasing activities for this sale. A draft EIS can be published 5 months after completion of the task force report.

Suspension of Production or Operations (250.10)

The Regional Supervisor of the Office of Field Operations may, on the Regional Supervisor's initiative or at the request of the lessee, suspend or temporarily prohibit production or any other operation or activity on all or any part of a lease (suspension) when the Regional Supervisor determines that such suspension is in the national interest and that the suspension is necessary as follows:

- To facilitate proper development of a lease including reasonable time to construct production facilities;
- To allow for the construction or negotiation for use of transportation facilities;
- To allow reasonable time to enter into a sales contract for oil or gas, or both, when good faith efforts to secure such contract(s) are made;
- To allow reasonable time to commence drilling operations when good faith efforts are prevented by reasons beyond the lessee's control, such as unexpected weather or unavoidable accidents; or
- To avoid continued operations which would result in premature abandonment of a producing well(s) or would not be economic.

Supplemental Sales (30 CFR 256.12)

Effective September 8, 1988, the MMS regulations provide for the conducting of supplemental OCS lease sales (53 FR 29884). These sales are designed to give the MMS the flexibility to accelerate the leasing process, on the basis of new geological and geophysical data, where there is a need.

Supplemental sales will be limited to the following:

- blocks for which previously offered bids have been rejected,
- blocks for which high bids have been forfeited, generally during the previous calendar year, and
- blocks designated as developmental, including those susceptible to drainage. This designation indicates that a block is located on the same geologic structure as an existing lease having a well with indicated hydrocarbons.

Supplemental sales are designed to be limited in scope to exclude blocks from the central and western Gulf of Mexico where annual OCS lease sales are conducted. The procedures for supplemental sales are similar to those for regular OCS lease sales.

OCS Lease Sale 119, Central California

OCS Lease Sale 119, proposed for March 1991, has also been on hold subject to the congressionally imposed leasing moratorium for FY 1990. The Call for Information and Nominations and Notice of Intent to Prepare an EIS were issued in November 1988, and included 338 blocks, approximately 17 million acres, between 3 and 45 miles offshore, in water depths ranging from approximately 30 to 900 meters. The next step, Area Identification, has not occurred.

As mentioned in chapter 1, Sale P1 was held in 1963. Sale P1 offered some of the same acreage being considered for Sale 119. Several of the wells drilled on P1 leases had shows of hydrocarbons, but none were considered commercial at the time and all of the P1 leases were relinquished prior to the end of their primary terms.

The Call for Information for OCS Lease Sale 119 introduced the Sensitive Tract Evaluation Process (STEP). The STEP provides public opportunity to identify and characterize tracts of environmental sensitivity and to help establish criteria to evaluate whether such tracts should be offered for lease.

Summary of Postlease Activities on the Pacific OCS

Most of the postlease activities that have occurred within the Pacific OCS Region have taken place on OCS leases in the Southern California OCS Planning Area (see table 8). Less than 10 percent of the exploratory wells drilled in the Pacific OCS Region have been drilled outside of the Southern California OCS Planning Area; none of these were drilled within the past two decades. All of the OCS development wells and subsequent production have also come from this planning area.

Figure 9 (p. 30) shows from the recent drilling history of the Pacific OCS Region a marked shift toward development drilling and away from exploratory drilling. A variety of factors have influenced this shift, such as (1) a significant drop in oil prices, (2) permitting impediments, and (3) lack of new OCS acreage normally made available through lease sales. The most recent sale held in the Pacific OCS Region occurred in 1984. There are five 10-year primary term OCS leases remaining: two from Lease Sale 68 due to expire July 3, 1992; and three from Lease Sale 80 due to expire November 30, 1994. The sidebar on 30 CFR 250 and 256 (p. 18) provides information regarding the MMS final rule on consolidated operational regulations (53 FR 10596).

Exploration

Between August 1, 1987, and November 30, 1989, OCS operators submitted three exploration plans to MMS (see table 9 on the next page for details). All three of these plans covered operations proposed for the following leases acquired during OCS Lease Sale 80: OCS-P 512 (Texaco), OCS-P 522 (Conoco), and OCS-P 525 (Chevron). In accordance with MMS procedures, these plans were forwarded to the CCC for a review of the consistency of the proposed operations

Table 8. *Summary of Pacific OCS oil and gas postlease activities through November 30, 1989*

Lease sale	Area	Approved plans of exploration (1)	Exploratory wells spudded (2)	Approved development and production plans(1)	Development wells spudded(3)	Cumulative crude oil production (bbl)(4)	Cumulative gas production (Mcf)(4)
P1	(1963) CA	n/a	20	n/a	0	0	0
P2	(1964) WA-OR	n/a	12	n/a	0	0	0
P3	(1966) S. CA	n/a	6	n/a	93	41,449,055	31,577,337
P4	(1968) S. CA	18	142	5	406	338,992,574	329,924,035
35	(1975) S. CA	6	41	2	131	39,736,422	14,087,668
48	(1979) S. CA	27	32	2	33	282,519	49,234,214
53	(1981) C. CA*	28	55	3	25	10,754,428	2,151,994
68	(1982) S. CA	11	17	0	0	0	0
RS-2	(1982) C. CA*	4	1	0	0	0	0
73	(1983) C. CA*	1	0	0	0	0	0
80	(1984) S. CA	2	1	0	0	0	0
	Totals	97**	327	12	688	431,214,998	426,975,248

(1) As of November 1, 1988. Only plans submitted subsequent to enactment of the OCS Lands Act Amendments of 1978 have been included in this table.
(2) As of November 30, 1989.
(3) As of November 30, 1989.
(4) As of December 31, 1988, includes crude oil, condensate gas, and casinghead gas; bbl = barrels; Mcf = thousand cubic feet.
(*) Planning area at the time of sale was called the Central and Northern California; all blocks leased are now within the Southern California Planning Area.
(**) Four plans cover leases from more than one sale.
n/a Not applicable.

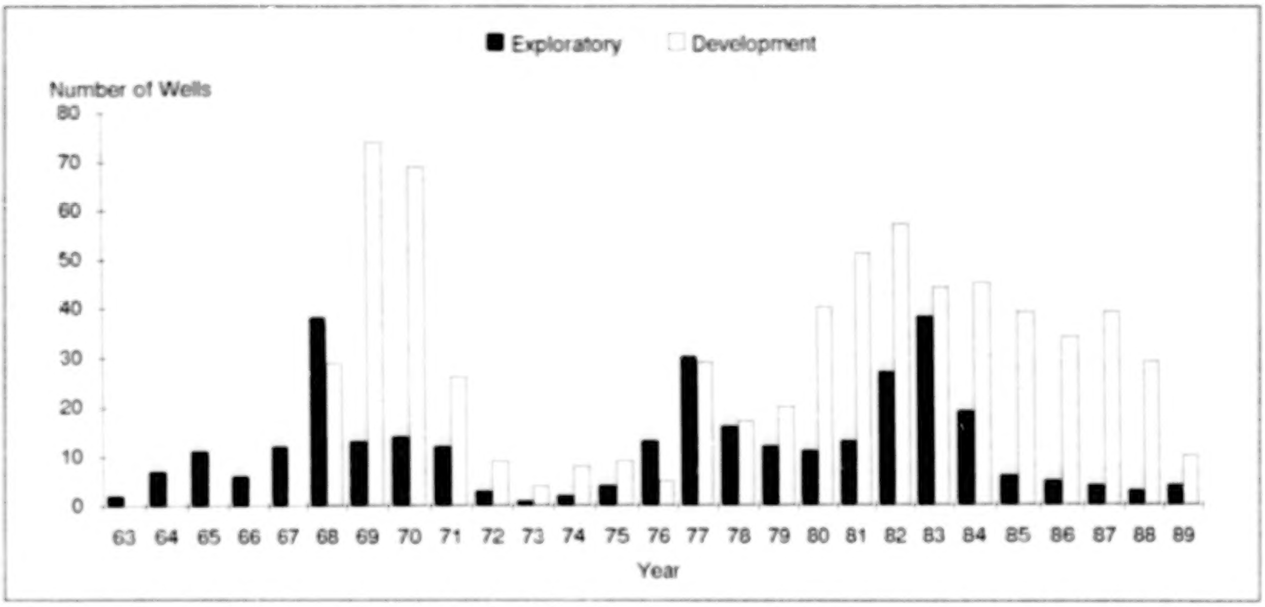


Figure 9. *Annual levels of exploratory and development well drilling in the Pacific OCS Region through November 30, 1989.*

with the California coastal zone management (CZM) program.

The CCC objected to the consistency certification for each of these plans and each operator's request for an individual National Pollutant Discharge Elimination System permit from the EPA. A timely review and objection to such exploration plans by the CCC prevents any other permits from being issued for the proposed project. After receiving an objection by the CCC to its consistency certification, an operator has three choices: (1) modify its plans to address the stated concerns of CCC; (2) appeal to the Secretary of the Department of Commerce; or (3) withdraw its proposed plan. Each of the three operators that submitted the exploration plans listed in table 9 on the next page have appealed the CCC objections to the Secretary of Commerce in accordance with the CZM Act (16 U.S.C. 1456) and its implementing regulations (15 CFR 930 Subpart H). On May 19, 1989, the Secretary of Commerce issued an affirmative override decision in favor of Texaco on its appeal for an exploration plan on lease OCS-P 512 on the basis that the proposed activity is consistent with the objectives or purposes of the Act. The other two appeals are still being reviewed by the Secretary.

The most heavily explored area of the OCS offshore California is the Santa Barbara Basin. Exploratory drilling began there in 1967 and has continued up to the present. Exploratory drilling elsewhere on the OCS offshore California has been concentrated for short periods of time. Almost 10 years after exploration began in the Santa Barbara Basin, operators expanded their activities to the San Pedro Basin offshore Los Angeles. More recently, in the period 1982-86, OCS operators focused on the Santa Maria Basin. Accordingly, development drilling has followed in each of these three basins.

Table 10 (p. 32) lists each of the Applications for Permit to Drill (APD) approved by the MMS from August 1, 1987, through October 31, 1989. As table 10 shows, most of the APD requests have been for development wells. Table 11 (p. 33) presents an historical summary of exploratory drilling based on official protraction diagram locations in the Pacific OCS Region (see also fig. 1, p. 2).

Table 9. *Exploration plans submitted to or approved by MMS from August 1, 1987, through November 30, 1989*

Lease OCS-P	UNIT/(field)	Legal description	No. of Wells	Operator	Submittal date	Approval date
0512	n/a	Block 5482, 6A	1 - 8	Texaco	09/16/87	10/16/87
0522	SMUGGLER'S COVE	Block 4966, 6B	1 - 6	Conoco	02/02/88	03/03/88
0525	ANACAPA	Block 4864, 6B	1 - 5	Chevron	03/01/88	03/31/88

n/a = Not applicable.

Table 12 (p. 33) presents data on those exploratory wells spudded between July 7, 1987, and October 31, 1989. Appendix B (p. 83) to this report provides similar data for all exploratory wells drilled on the Pacific OCS.

Discoveries

After an OCS operator has drilled a well that is capable of producing in paying quantities, it may request an extension of its primary lease term. This extension is accomplished through a suspension of production (SOP). The operator may request the SOP to allow it to further delineate or develop its prospect to the production stage. The term of each SOP varies so that the MMS may consider the unique factors affecting development of each prospect.

Effective May 31, 1988, the MMS changed its procedures for determining well producibility. Prior to that time, an OCS operator was required to submit to MMS an evaluation of each exploratory well that it drilled. This requirement was stated under what was then known as OCS Order No. 4. This OCS order, and all others, were incorporated in the MMS regulations beginning May 31, 1988. OCS Order No. 4 became 30 CFR 250.11, "Determination of Well Producibility." In accordance with the terms of 30 CFR 250.11, an operator may request that a determination of well producibility be made for any well that is drilled. Such a determination is the basis of MMS's decision to grant a suspension of production to allow time to develop the lease.

Once an operator determines that enough information is available to allow successful field development, it must submit a development and production plan for MMS approval. After reviews by the MMS, other Federal agencies, and responsible State officials, a plan may be approved. If a plan is approved, the operator proceeds in an orderly manner (1) to construct and install its production platform, (2) to obtain approval of individual APD's and drill the required development wells to completion, (3) to install the appropriate pipelines and any necessary onshore facilities, and (4) to begin production.

There are currently 1 central processing and 20 production platforms fully installed in the Pacific OCS Region, as well as a floating storage and treating vessel; all lie offshore southern California. Table 13 (p. 35) presents a brief history for each of these platforms, as well as their locations. On June 21, 1989, Exxon installed the jacket for Platform Harmony in the Santa Ynez Unit in Federal waters near Gaviota, California. On October 7, 1989, the jacket for Platform Heritage was installed in the Santa Ynez Unit on lease OCS P-0182. An additional platform is planned and approved for installation within the Santa Ynez Unit. (See related discussion on the Santa Ynez Unit in ch. 3, p. 52.) Another platform received approvals from both Federal and State officials, but its installation cannot pro-

Table 10. *Applications for Permit to Drill approved by MMS, by unit or field, from August 1, 1987, through November 30, 1989*

UNIT/(field)	Lease OCS-P	Platform	Well no.(1)	Operator	Approval date
ANACAPA	0478		002	Chevron	10/27/88
			003	Chevron	02/24/89
CASTLE ROCK	0321		003	Chevron	08/29/88
(Dos Cuadras)	0240	Henry	A051	Oryx	12/02/87
	0240	Henry	A052	Oryx	12/11/87
(Point Arguello)	0315	Harvest	A008	Texaco	08/14/87
	0315	Harvest	A009	Texaco	08/21/87
	0315	Harvest	A010	Texaco	10/27/87
	0315	Harvest	A011	Texaco	11/04/87
	0315	Harvest	A012	Texaco	11/25/87
	0315	Harvest	A013	Texaco	12/15/87
	0315	Harvest	A014	Texaco	12/23/87
	0315	Harvest	A015	Texaco	01/13/88
	0315	Harvest	A016	Texaco	02/04/88
	0315	Harvest	A017	Texaco	02/12/88
	0315	Harvest	A018	Texaco	03/11/88
	0315	Harvest	A019	Texaco	04/14/88
	0316	Hermosa	B005	Chevron	08/11/87
	0316	Hermosa	B006	Chevron	11/05/87
	0316	Hermosa	B008	Chevron	02/17/88
	0316	Hermosa	B009	Chevron	03/31/88
	0316	Hermosa	B010	Chevron	05/12/88
	0316	Hermosa	B011	Chevron	06/09/88
	0316	Hermosa	B012	Chevron	07/22/88
	0316	Hermosa	B013	Chevron	07/29/88
	0450	Hidalgo	C001	Chevron	11/20/87
	0450	Hidalgo	C002	Chevron	01/07/88
	0450	Hidalgo	C003	Chevron	02/29/88
	0450	Hidalgo	C004	Chevron	05/06/88
	0450	Hidalgo	C005	Chevron	06/20/88
	0450	Hidalgo	C006	Chevron	08/30/88
	0451	Hidalgo	C007	Chevron	11/01/88
(Point Pedernales)	0441	Irene	A018	Unocal	10/10/89
GATO CANYON	0460		002	Samedan	12/22/88
POINT HUENEME	0203	Gina	H013	Unocal	03/15/88
	0203	Gina	H014	Unocal	08/05/88
ROCKY POINT	0451	Hermosa	B007	Chevron	12/21/87
SANTA CLARA					
(Santa Clara)	0216	Gilda	S052	Unocal	08/24/87
	0216	Gilda	S067	Unocal	11/04/87
	0216	Gilda	S069	Unocal	11/03/89
	0216	Gilda	S071	Unocal	11/08/89
(Sockeye)	0205	Gail	E001	Chevron	06/09/88
	0205	Gail	E003	Chevron	09/08/88
	0205	Gail	E004	Chevron	10/21/88
	0205	Gail	E005	Chevron	11/16/88
	0205	Gail	E010	Chevron	11/01/89
	0209	Gail	E002	Chevron	07/29/88
SANTA YNEZ	0196		001	Exxon	06/08/88
(Hondo)	0188	Hondo	H033	Exxon	11/04/87
	0188	Hondo	H034	Exxon	04/01/88
	0188	Hondo	H035	Exxon	10/02/88
	0188	Hondo	H036	Exxon	07/13/88
SMUGGLER'S COVE	0475		001	Conoco	09/13/89
	0469		002	Arco	
	0512		001	Texaco	10/30/89

(1) Well numbers preceded by a letter are development wells; those without are exploratory wells.

Table 11. *Exploratory wells drilled in the Pacific OCS Region, by OPD location number, through November 30, 1989*

[Includes two deep stratigraph test exploratory wells (6D, 1975 and N1 10-6, 1978)]

OPD No.	Year Spudded																											Total Wells
	'63	'64	'65	'66	'67	'68	'69	'70	'71	'72	'73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89*	
6A						9	7	9	11	2					1	4	1	7	10	10	7	1	2		1	2	2	86
6B					6	29	6	5	1	1	1	2	4	5	6	8	9	3	2	4	6	8		2	2	1	3	114
6C														7	19	4	1		1									32
6D													1	1	4		1	1										8
NI 10-3		1																		1	3	1	1	1				8
NI 10-6																1				12	22	9	3	2	1			50
NJ 10-2			1	2																								3
NJ 10-5	1	4	2		1																							8
NJ 10-8	1		1		2																							4
NK 10-1					1																							1
NK 10-7		2	2																									4
NL 10-4			1	3	2																							6
NL 10-10			4	1																								5
Yearly Total	2	7	11	6	12	38	13	14	12	3	1	2	5	13	30	17	12	11	13	27	38	19	6	5	4	3	5	329

* Data through November 30, 1989

Table 12. *Exploratory wells spudded on the Pacific OCS as of November 30, 1989*

Lease number (OCS-P)	Block number	OPD number	Lease status (1)	Operator	Well number	Spud date	Date plugged and abandoned	Water depth (ft)	Total depth (ft)
0456	5586	6A	R	Texaco	1	07/07/87	09/29/87	1,402	10,155
0196	5380	6A	A	Exxon	1	06/13/88	09/18/88	323	10,135
0321	5483	6A	A	Chevron	3	09/01/88	10/25/88	840	11,690
0478	4863	6B	A	Chevron	2	10/29/88	2/24/89	380	14,057
0478	4863	6B	A	Chevron	3	02/24/89	04/10/89	380	13,795
0460	5372	6A	A	Samedan	2	01/09/89	04/12/89	573	7,210
0475	4866	6B	A	Conoco	1	09/22/89	11/19/89	830	9,240
0512	5482	6B	A	Texaco	1	10/30/89		319	

(1) A = Active; R = Relinquished

ceed until the operator receives approval from the coastal county where it has proposed to locate its onshore treatment facilities. (See related discussion on the San Miguel field project, p. 55.) Several other platforms have been discussed by various operators for leases in the Santa Maria Basin; however, these operators have not officially begun the development plan review and approval process that would lead to platform installation. Table 14 (p. 36)presents currently known information about the platforms proposed to be installed in the Pacific OCS Region.

Unitization

A unit is formed on the OCS to expedite and promote exploration and development efforts. Unitization may be approved or required for the prevention of waste, the conservation of natural resources, and the protection of correlative rights.

There are 19 active unit agreements in the Pacific OCS Region. Background information on each of these units is presented in Appendix C, p. 89. The 19 Pacific OCS Region units cover all or portions of 108 of the 123 existing leases therein. Two of these units, Bonito and Smuggler's Cove, contain a portion of an unleased block. The Point Hueneme and the Mussel Rock unit agreements are the newest in the Pacific OCS Region. The former was approved for three Federal leases adjacent to Oxnard and Point Hueneme on February 29, 1988. This unit comprises leases OCS-P 0202, 0203, and 0479. Unocal, the designated operator for the Point Hueneme Unit, installed Platform Gina on lease OCS-P 0202 during 1980 to develop the Hueneme field. The field was discovered on leases OCS-P 0202 and 0203 in 1969; production commenced in 1982. After a discovery well was made on lease OCS-P 0479, in 1987, Unocal arranged the unit agreement. The Mussel Rock Unit was approved January 31, 1989, and covers leases OCS-P 0504 and 0505 in the northern Santa Maria Basin. Texaco is the operator. There are currently no platforms on either lease.

Development and Production

After installing an offshore platform, the operator applies for approval for each of its development wells. To efficiently produce the field, the operator drills numerous development wells from each platform. Though the influence of lower oil and gas prices has dramatically affected exploratory drilling, the levels of development drilling have been relatively constant for the past 6 years (see fig. 9, p. 30). This difference reflects the fact that at the development stage, having persevered through the lengthy permit process, an operator is much closer to being able to recoup some of the substantial investment in a project.

Following successful development drilling, produced hydrocarbons are frequently transported to shore in pipelines for processing and subsequent refining. Some preliminary processing may be done offshore on the production platform depending on the quality of the hydrocarbons, available transportation network, proximity of an operator's onshore processing facilities, and the facilities' capabilities. All of the production projects in the Pacific OCS Region are located in the Southern California OCS Planning Area. A separate, oversized map plate displaying southern California offshore oil and gas activities and their onshore facilities is available from the following address and telephone number:

Document Distribution Center
Minerals Management Service, MS 4610
381 Elden St.
Herndon, VA 22070-4817
(703) 787-1080

Production of crude oil and condensate from producing fields in the Pacific OCS Region during calendar year 1987 averaged over 85 thousand barrels per day (Mbpd)—an increase of over 8 percent from 1986 production levels. Then in 1988, production

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Table 13. *Existing platforms and development wells spudded on the Pacific OCS as of November 30, 1989*

Platform (Operator)	Jacket fabrication site	Deck fabrication site	Lease OCS-P	OPD	UNIT/(field)	No. of well slots	No. of development wells spudded by year (1)																						Total
							68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89*	
Edith (Unocal)	Japan	Vallejo, CA	0296	6C	BETA/(Beta)	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	11	8	0	.....	.....	.....	21
Ellen (SWEPI)	Malaysia	Japan	0300	6C	BETA/(Beta)	80	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	21	21	6	8	0	1	1	.....	.....	66
Elly(2) (SWEPI)	Malaysia	Japan	0300	6C	BETA/(Beta)	n/a	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0
Eureka (SWEPI)	Vallejo, CA	Morgan City, LA	0301	6C	BETA/(Beta)	60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	16	18	9	.....	.....	44
Gail (Chevron)	Japan	Stockton, CA	0205	6B	SANTA CLARA/(Sockeye)	36	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	3	9
Gilda (Unocal)	Japan	Japan	0216	6B	SANTA CLARA/(Santa Clara)	96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	8	20	16	9	4	3	.....	1	63
Gina (Unocal)	Japan	Japan	0202	6B	POINT HUENEME/ (Hueneme)	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	9	1	0	0	0	.....	2	.....	14
Grace (Chevron)	Japan	Anacortes, WA	0217	6B	SANTA CLARA/(Santa Clara)	48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	8	7	5	5	0	0	.....	.....	.....	34
Habitat (Texaco)	Japan	Vallejo, CA	0234	6B	PITAS POINT/(Pitas Point)	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	5	3	3	1	.....	.....	.....	17
Harvest (Texaco)	Korea	Korea	0315	6A	(Point Arguello)	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	12	5	.....	19
Henry (Oryx)	Vallejo, CA	San Bernadino, CA	0240	6B	(Carpinteria Offshore)	24	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9	13	3	0	0	0	0	.....	.....	.....	25
Hermosa (Chevron)	Japan	Morgan City, LA	0316	6A	(Point Arguello)	48	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6	6	.....	12
Hidalgo (Chevron)	Japan	Vallejo, CA	0450	NI 10-6	(Point Arguello)	56	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	6	.....	7
Hillhouse (Oryx)	Oakland, CA	Oakland, CA	0240	6B	(Dos Cuadras)	60	.....	.....	18	24	0	1	0	1	1	1	0	0	0	0	0	0	1	1	0	1	1	.....	50
A (Unocal)	Vancouver, WA	Vancouver, WA	0241	6B	(Dos Cuadras)	57	3	16	26	1	1	1	4	6	3	1	1	1	0	0	0	1	0	0	0	.....	.....	.....	65
B (Unocal)	Vancouver, WA	Vancouver, WA	0241	6B	(Dos Cuadras)	63	.....	17	25	1	8	2	3	2	1	1	2	2	1	1	0	1	0	0	0	.....	.....	.....	67
C (Unocal)	Vancouver, WA	Vancouver, WA	0241	6B	(Dos Cuadras)	60	.....	.....	.....	.....	.....	.....	.....	.....	.....	21	2	4	0	0	0	0	0	0	0	.....	.....	.....	27
Hogan (Phillips)	Morgan City, LA	Morgan City, LA	0166	6B	(Carpinteria Offshore)	66	26	12	0	0	0	0	0	0	0	3	7	2	0	0	0	0	0	0	0	.....	.....	.....	50
Hondo(3) (Exxon)	Oakland, CA	Morgan City, LA	0188	6A	SANTA YNEZ/(Hondo)	28	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	5	5	6	4	4	3	0	2	0	2	3	1	37
Houchin (Phillips)	Morgan City, LA	Morgan City, LA	0166	6B	(Carpinteria Offshore)	60	.....	29	0	0	0	0	1	0	0	0	0	6	7	0	0	0	0	0	0	.....	.....	.....	43
Irene (Unocal)	Japan	Japan	0441	NI 10-6	POINT PEDERNALES/ (Point Pedernales)	72	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	8	4	.....	6	18
						Total	29	74	69	26	9	4	8	9	5	29	17	20	40	51	57	44	45	39	34	39	29	11	688

(1) The annual well count is determined by spud date. Well count includes all producing and shut-in oil and gas wells and those wells that are either plugged and abandoned, suspended, or actively drilling.
(2) Platform Elly is a processing platform from which no wells will be drilled. Only initial treatment and storage will be done there.
(3) Also on this lease Exxon operates an offshore storage and treating vessel (OS&T) that separates and treats production from Platform Hondo.
n/a = Not applicable.
* Data through November 30, 1989

Table 14. *Platforms proposed to be installed in the Pacific OCS Region as of November 30, 1989*

Platform	Operator	Origin of jacket fabrication	Origin of deck fabrication	Lease OCS-P	UNIT/(field)	Number of well slots	Water depth (ft)	First production
Heritage*	Exxon	Korea	Korea	0182	SANTA YNEZ/(Pescado)	60	1,075	1992
Heather	Exxon	(**)	(**)	0193	SANTA YNEZ/(Sacate)	28	620	?
Julius	SWEPI	Korea		0409	(San Miguel)	70	478	?
Iris(1)	Unocal	(**)	(**)	0440	PT. PEDERNALES/ (Pt. Pedernales)	60	285	?

(1) Previous operator (Exxon) called it Independence.
(*) Jacket installed October 7, 1989.
(**) Construction has not commenced.

increased slightly to about 86 Mbpd. The 1988 production rate set a new record for the Pacific OCS Region (see table 15 on the next page). Much of this increased production can be attributed to the startup of Platform Irene in the Point Pedernales Unit. The Pacific OCS Region currently accounts for slightly less than 10 percent of the crude oil and condensate produced from the OCS nationwide.

Production of natural gas from the Pacific OCS Region declined approximately 30 percent between 1985 the peak year and 1988. Converting gas production to barrels of oil equivalents, using 6 thousand cubic feet (Mcf) per barrel of oil equivalent (BOE) and combining this with the figures for oil and condensate produced, the Pacific OCS Region accounted for more than 110 thousand barrels of oil equivalent (MBOE) per day during 1987.

The startup of OCS production projects, specifically Point Arguello in 1990 and the further development of Santa Ynez in 1992 (see related discussions in ch. 3, p. 49), will begin to significantly increase the production from the Pacific OCS during the next 5 years. Production rates from this OCS region are expected to double by 1992 or 1993. Because of the dramatic effect that reduced oil prices have had, however, these projections are substantially less than those made several years ago.

Transportation

Pipelines

Both the State of California and the Federal Government have identified pipelines as the preferred mode for transporting crude oil production from offshore development projects to processing facilities. Accordingly, the majority of crude oil and all natural gas produced offshore California is transported to shore-based processing facilities. The two exceptions are Exxon's transporting crude oil to the OS&T vessel and SWEPI's platform Elly as an offshore processing unit in the Beta field.

At issue is the mode of transportation employed after treated crude oil leaves a processing facility for its target refinery. In some cases, industry may not have an onshore pipeline network available that could send the treated oil to a specific refinery. They, therefore, may make an economic decision to tanker the crude oil rather than attempt to obtain permits and construct a pipeline. The State of California prefers to have all crude oil transported by pipeline.

Table 15. *California's contribution to national production from the OCS through 1988*

Year	Oil and Condensate (bbl) National OCS production	California OCS production	Percent of national	Production change (+/-) (*)	Natural Gas (Mcf) National OCS production	California OCS production	Percent of national	Production change (+/-) (*)	Year
1968 (1)	268,995,890	2,076,160	0.77		1,524,178,078	1,237,180	0.08		(1) 1968
1969 (2)	312,859,987	9,942,733	3.18	378.90	1,954,486,975	6,016,485	0.31	386.31	(2) 1969
1970 (3)	360,646,168	25,035,171	6.94	151.79	2,418,676,591	13,757,148	0.57	128.66	(3) 1970
1971	418,548,946	31,103,681	7.43	24.24	2,777,043,418	17,853,055	0.64	29.77	1971
1972	411,885,893	22,562,566	5.48	-27.46	3,038,554,773	12,546,915	0.41	-29.72	1972
1973	394,729,999	18,818,026	4.77	-16.60	3,211,588,422	9,157,714	0.29	-27.01	1973
1974	360,594,065	16,784,100	4.65	-10.81	3,514,723,907	7,234,937	0.21	-21.00	1974
1975	330,237,452	15,434,507	4.67	-8.04	3,458,693,454	5,978,959	0.17	-17.36	1975
1976	316,920,109	13,977,436	4.41	-9.44	3,595,923,526	5,533,258	0.15	-7.45	1976
1977 (4)	303,948,240	12,258,013	4.03	-12.30	3,737,746,922	5,366,181	0.14	-3.02	(4) 1977
1978	292,265,042	11,979,674	4.10	-2.27	4,385,060,878	5,193,985	0.12	-3.21	1978
1979	285,565,538	10,971,013	3.84	-8.42	4,672,979,139	5,430,689	0.12	4.56	1979
1980 (5)	277,388,975	10,118,614	3.65	-7.77	4,641,456,983	5,771,792	0.12	6.28	(5) 1980
1981 (6)	289,765,405	19,619,670	6.77	93.90	4,849,536,728	12,769,110	0.26	121.23	(6) 1981
1982 (7)	321,211,457	28,471,665	8.86	45.12	4,679,511,272	17,814,958	0.38	39.52	(7) 1982
1983 (8)	348,331,243	30,558,866	8.77	7.33	4,040,733,857	23,923,258	0.59	34.29	(8) 1983
1984 (9)	370,239,014	30,500,506	8.24	-0.19	4,537,841,051	45,912,435	1.01	91.92	(9) 1984
1985 (10)	386,324,285	29,674,099	7.68	-2.71	4,000,975,226	63,523,094	1.59	38.36	(10) 1985
1986	389,216,002	28,779,968	7.39	-3.01	3,948,895,001	58,003,369	1.47	-8.69	1986
1987 (11)	366,141,709	31,284,618	8.54	8.70	4,425,581,690	54,874,298	1.24	-5.39	(11) 1987
1988	320,667,424	31,529,776	10.17	-2.81	4,309,874,827	49,132,759	0.80	-15.65	1988
Totals	7,126,482,843	431,480,862	6.05		77,724,062,718	427,031,579	0.55		

(1) Initial production: Platform Hogan
(2) Initial production: Platforms Houchin and A
(3) Initial production: Platforms Hillhouse and B
(4) Initial production: Platform C
(5) Initial production: Platforms Henry and Grace
(*) Increase or decrease from previous year.
(6) Initial production: Platforms Hondo, Ellen, and Gilda
(7) Initial production: Platform Gina
(8) Initial production: Platform Habitat
(9) Initial production: Platform Edith
(10) Initial production: Platform Eureka
(11) Initial production: Platform Irene

Note: These production figures represent "sales" production not total volumes produced.

Currently, the Point Arguello project has stalled because of this transportation issue (see ch. 3, p. 49, for further information).

Table 16 on the next page presents information on both existing and proposed pipelines on the OCS offshore California. This information is graphically depicted on a map plate that is available from the following address and telephone number:

Document Distribution Center
Minerals Management Service, MS 4610
381 Elden St.
Herndon, VA 22070-4817
(703) 787-1080

No OCS pipeline permit requests were submitted to, or approved by, the MMS during the period of this report. More specific information on the development projects for which these pipelines were required is presented in Chapter 3 of this report. Within the next 2 to 3 years, it can be anticipated that several new pipelines will be installed on the Pacific OCS offshore Southern California. The Santa Ynez Unit and the San Miguel field development projects will be required to ship their production to shore through such pipelines. (See table 14, p. 36, or ch. 3 for more information on these projects.)

The advancement of various development projects in the northern Santa Barbara Basin and the southern Santa Maria Basin has provided the impetus to develop several onshore pipeline projects designed to transport crude oil from processing facilities to refineries. As reported in the last Pacific Summary Report, three major pipeline projects were in various stages of development. These projects were the All American

Table 16. *Existing and proposed OCS pipelines offshore Callifornia as of November 30, 1989*

UNIT/ (Field)	Platform	Pipeline operator	Landfall	Size and type	Status
SANTA YNEZ	Hondo(1) to shore	POPCO	Las Flores Canyon	12-in gas	Operating
(Hondo)	Hondo to OS&T	Exxon		12-in oil 6-in fuel 8-in water	Operating
(Dos Cuadras)	C to B	Unocal	____(2)	6-in oil 6-in gas 6-in water	Operating
(Dos Cuadras)	B to A to Shore	Unocal	Rincon	12-in oil 12-in gas 6-in water	Operating
(Dos Cuadras)	A to Hillhouse	Oryx	____(2)	8-in oil 8-in gas 6-in water	Operating
(Dos Cuadras/ Carpinteria Offshore)	Hillhouse to Henry	Oryx	____(2)	8-in oil 6-in gas 8-in water	Operating
(Carpinteria Offshore)	Hogan to Houchin to shore	Phillips	La Conchita	10-in oil 12-in gas 10-in gas lift 4-in water	Operating
PITAS POINT/ (Pitas Point)	Habitat to shore	Pacific Interstate Offshore Company	Carpinteria	12-in gas	Operating
SANTA CLARA/ (Sockeye)	Gail to Grace	Chevron	____(2)	8-in oil 8-in gas 8-in service	Operating
SANTA CLARA/ (Santa Clara)	Grace to Hope (State waters) Hope to shore	Chevron	Carpinteria	12-in oil(3) 10-in gas(3) 10-in oil 10-in gas 10-in gas lift	Operating
SANTA CLARA/ (Santa Clara)	Gilda to shore	Unocal	Mandalay Beach	12-in oil 10-in gas 6-in water	Operating
POINT HUENEME	Gina to shore	Unocal	Mandalay Beach	10-in oil/ gas (4) 6-in water	Operating
BETA/(Beta)	Ellen to Elly	SWEPI	____(2)	14-in oil 4-in gas	Operating
BETA/(Beta)	Elly to shore	SWEPI	Long Beach	16-in oil	Operating
BETA/(Beta)	Eureka to Elly	SWEPI	____(2)	12-in oil 6-in gas 10-in water	Operating
BETA/(Beta)	Edith to Elly	Unocal	____(2)	6-in oil	Operating
BETA/(Beta)	Edith to Eva (State waters) to shore	Unocal	Huntington Beach	6-in gas	Operating
(Point Arguello)	Hermosa to shore	Chevron	Point Conception	24-in oil 20-in gas	Installed
(Point Arguello)	Harvest to Hermosa	Texaco	____(2)	12-in oil 8-in gas	Installed
(Point Arguello)	Hidalgo to Hermosa	Chevron	____(2)	16-in oil 10-in gas	Installed
POINT PEDERNALES	Irene to shore	Unocal	Vandenberg Air Force Base	20-in oil 8-in gas 8-in water	Operating
POINT PEDERNALES	Iris to Irene	Unocal	____(2)	10-in oil 6-in gas	Proposed
(San Miguel)	Julius to shore	SWEPI	Guadalupe Field	20-in oil 10-in water 8-in service/ fuel	Proposed

(1) Oil from Platform Hondo is stored and treated on an offshore storage and treatment vessel, then offloaded on tankers. Additional platform and pipeline emplacement options for the Santa Ynez Unit are currently under review.
(2) Indicates pipeline links two platforms.
(3) Lines from Platform Grace to Platform Hope.
(4) One line carries oil and gas.

Table 4. *Lease sale history for the Pacific OCS Region as of November 30, 1989*

Lease sale	Sale date	Area	Blocks offered	Acres offered	No. of bids rec'd	Blocks bid on	Acres bid on	Blocks leased	Acres leased	Total bonus leased blocks	Average bonus per acre	Existing leases
P1	05/14/63	C. & N. CA	129	669,777	70	58	312,975	57	312,945	12,807,337	41	0
P2	10/01/64	WA-OR	196	1,090,074	222	101	580,853	101	580,853	35,533,701	61	0
P3	2/15/66	S. CA	1	1,995	7	1	1,995	1	1,995	21,189,000	10,619	1
P4	2/06/68	S. CA	110	540,609	164	75	383,341	71	363,181	602,719,262	1,660	34
35	2/11/75	S. CA	231	1,257,593	166	70	384,540	56	310,049	417,312,141	1,346	4
48	6/29/79	S. CA	148	792,845	112	55	294,018	54	288,260	572,825,418	1,987	13
53	5/28/81	C. CA(2*)	111	603,613	301	81	432,815	60	320,579	2,088,881,824 (2)	6,388	38
68	6/11/82	S. CA	140	716,866	66	35	176,253	29	147,066	117,875,281	669	15
RS-2(1)	8/05/82	C. CA(*)	27	153,716	19	12	68,318	10	56,932	4,369,472	77	2
73	1/30/83	C. CA(*)	137	768,341	14	8	43,801	8	43,801	16,022,336	366	4
80	0/17/84	S. CA	657	3,147,352	30	25	125,100	23	114,367	62,121,252	543	12
		Totals	1,887	9,742,781	1,171	521	2,804,009	470	2,540,028	3,951,657,024	$1,556 (3)	123

(1) Lease Sale RS-2 statistics given only for tracts in the Pacific Region.
(2) The one-fifth bonuses (totaling $41,081,734) on 12 leases were forfeited by the companies in May 1984. This amount is included in total bonus figure.
(3) Average bonus per acre of total bonus leased tracts.
(*) Planning Area at time of sale was called Central and Northern California; all blocks leased are now within Southern California Planning Area.

peal. The remaining two were denied consistency concurrence by the CCC. The operators for each of these plans, Chevron and Conoco, have appealed their denials to the Secretary of Commerce. (For more details on these plans, see Exploration on p. 29.)

OCS Lease Sales Scheduled for the Pacific OCS Region

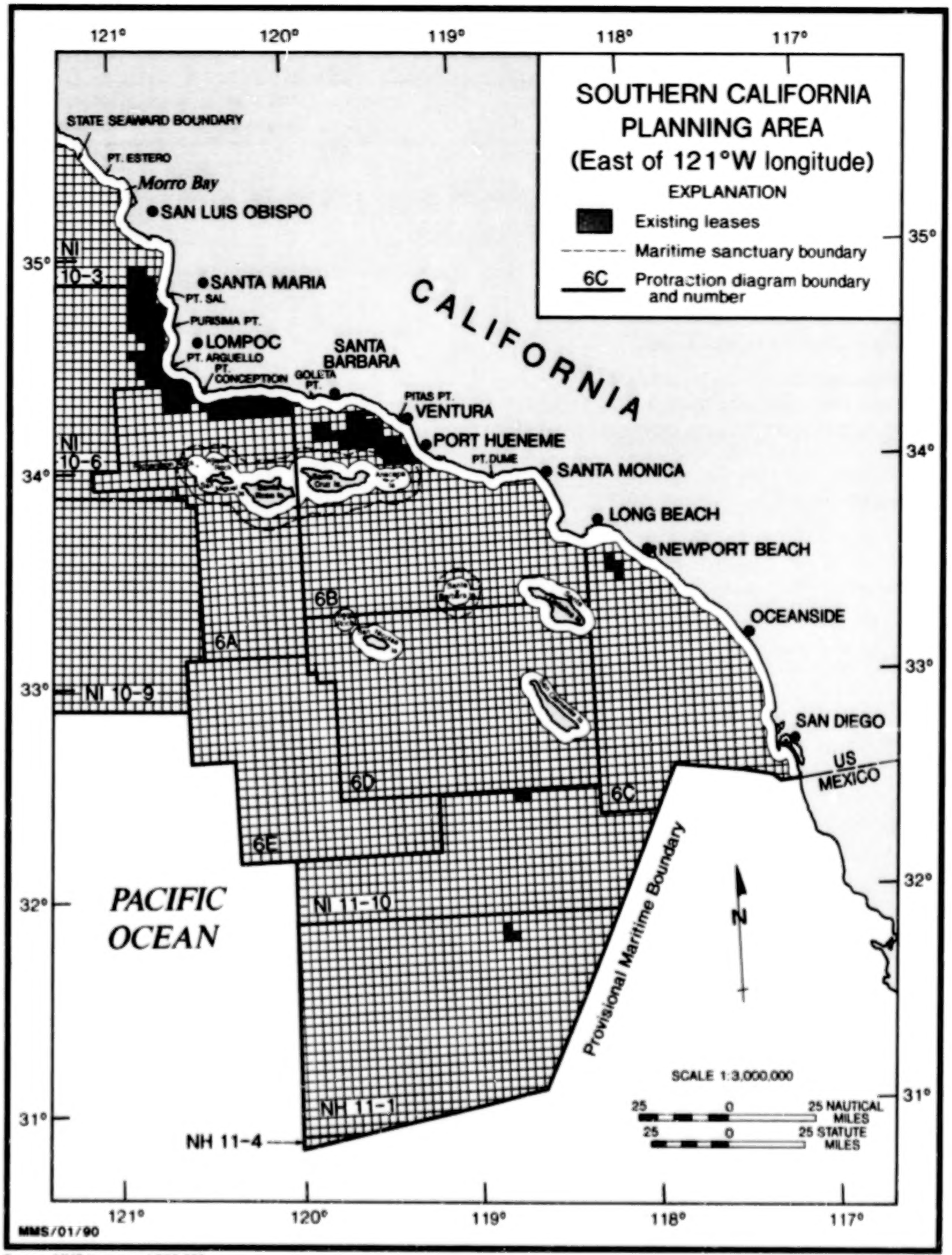
Six OCS lease sales remain scheduled under the July 1987 Final 5-Year OCS Oil and Gas Leasing Program for the Pacific OCS Region. In addition to these six OCS sales, three supplemental sales have been scheduled (see sidebar on Supplemental Sales on p. 28). To date, none of the supplemental sales on the schedule have occurred. Of the six scheduled OCS lease sales, three (128 in Northern California, 132 in Washington-Oregon, and 138 in Southern California) have had no prelease activities. Prelease activities for Lease Sales 91, 95, and 119 are on hold because of the OCS leasing moratorium resulting from FY 1990 Appropriations Act funding. This moratorium also restricts G&G activities using explosives or drilling muds.

In addition to those areas under a leasing moratorium, the DOI has deferred leasing for substantial portions of the rest of the Pacific OCS Region during the remainder of the current 5-year OCS leasing program.

Table 5. *Dates of significant prelease steps for Pacific OCS lease sales as of November 30, 1989*

Lease Sale Number/Area	C	A	E	F	P	N	S
P1, CA	27 FR 867 01/30/62					27 FR 9734 10/02/62 27 FR 12228 12/11/62 28 FR 2288 03/08/63 28 FR 2509 03/14/63 28 FR 3218 04/03/63	Canceled 01/08/63 Canceled 03/13/63 Canceled 04/11/63 05/14/63
P2, WA-OR	28 FR 8328 08/14/63	02/19/64				29 FR 2562 02/19/64 29 FR 3819 03/27/64	10/01/64
S. CA						31 FR 14534 11/11/66	12/15/66
P4, S. CA	31 FR 16629 12/29/66					32 FR 20884 12/28/67	02/06/68
35, S. CA	39 FR 18 01/02/74 39 FR 4934 02/08/74	08/12/74	40 FR 15917 04/08/75	40 FR 34425 08/15/75		40 FR 51672 11/06/75 40 FR 52070 11/07/75 40 FR 52421 11/10/75 40 FR 55871 12/02/75	12/11/75
48, S. CA	41 FR 29440 07/16/76	01/18/77	43 FR 38944 08/31/78 43 FR 42312 09/20/78	44 FR 6213 01/31/79	44 FR 17583 03/22/79	44 FR 30770 05/29/79 44 FR 32048 06/04/79	06/29/79
53, C. CA	42 FR 60794 11/29/77	10/10/78 44 FR 26215 05/04/79	45 FR 26478 04/18/80	45 FR 58979 09/05/80	45 FR 71139 10/27/80 46 FR 12435 02/13/81	46 FR 23673 04/27/81	05/28/81
68, S. CA	44 FR 76867 12/28/79	45 FR 84878 12/30/80	46 FR 28951 05/29/81 46 FR 33110 06/26/81	46 FR 57763 11/25/81	47 FR 5177 02/03/82	47 FR 20517 05/12/82	06/11/82
RS-2, C. CA					47 FR 13983 04/01/82 47 FR 14961 04/07/82	47 FR 29151 07/02/82	08/05/82
73, C. CA	45 FR 79401 11/28/80	05/05/82 47 FR 58390 12/30/82	48 FR 9951 03/09/83	48 FR 29959 06/29/83	48 FR 31577 07/08/83 48 FR 36910 08/15/83	48 FR 50007 10/28/83	11/30/83
80, S. CA	47 FR 52790 11/23/82 47 FR 22477 05/24/82	03/80	48 FR 29067 06/24/83	48 FR 54906 12/07/83	49 FR 22740 05/31/84	49 FR 36475 09/17/84 49 FR 38993 10/02/84	10/17/84
91, N. CA	51 FR 5496 02/13/86	51 FR 40522 11/07/86	52 FR 47764 12/16/87 53 FR 2892 02/02/88				Postponed
95, S. CA	50 FR 2630 01/17/85 52 FR 3881* 02/06/87 52 FR 25956 07/09/87 53 FR 46590** 11/17/88	52 FR 34725 09/14/87					Postponed
119, C. CA	53 FR 46422 11/16/88						Proposed 03/91
126, N. CA							Proposed 02/92
132, WA-OR							Proposed 04/92
138, S. CA							Proposed 06/92

C = Call for Information & Nominations & Notice of Intent to Prepare an EIS
A = Area Identification/Tentative Tract Selection (Public Announcement)
E = Draft EIS (Notice of Availability)
F = Final EIS (Notice of Availability)
P = Proposed Notice of Sale (Notice of Availability)
N = Notice of Sale
S = Sale
(*) Request for Comments on Mitigating Measures.
(**) Supplemental Call



Source: MMS basemap 1:750,000

Figure 8. *Existing leases in the Pacific OCS Region as of November 30, 1989.*

Table 6. *Total existing leases and acreage in the Pacific OCS Region, by location, as of November 30, 1989*

Location	Number of leases	Total acreage
Santa Barbara Channel		
Leases 0166 - 0241 (Sale P3, 12/15/66, and P4, 02/06/68)	35	179,656
Leases 0315 - 0367 (Sale 48, 06/29/79)	13	62,924
Leases 0456 - 0479 (Sale 68, 06/11/82)	13	62,325
Leases 0511 - 0527 (Sale 80, 10/17/84)	6	27,292
Total	67	332,197
South of Santa Barbara Channel		
Leases 0243 - 0311 (Sale 35, 12/11/75)	4	23,040
Leases 0480 - 0490 (Sale 68, 06/11/82)	2	11,386
Leases 0528 - 0535 (Sale 80, 10/17/84)	6	34,360
Total	12	68,786
Santa Maria Basin		
Leases 0373 - 0453 (Sale 53, 05/28/81)	38	202,672
Leases 0491 - 0502 (Sale RS-2, 08/05/82)	2	11,386
Leases 0503 - 0510 (Sale 73, 11/30/83)	4	22,716
Total	44	236,774
Grand total, all existing leases	123	637,757

The DOI has deferred leasing in each of the OCS planning areas as follows: 54 percent in the Southern California Planning Area; 89 percent in the Central California Planning Area; 91 percent in the Northern California Planning Area; and, 75 percent in the Washington-Oregon Planning Area. In addition, the DOI has highlighted another 8 percent of the Washington-Oregon OCS Planning Area for special consideration during the prelease procedures leading to OCS Lease Sale 132.

Leasing moratoria, permitting obstacles, and depressed oil prices continue to provide disincentives to the offshore industry. Beginning in August 1987, the MMS incorporated new Executive Branch initiatives to encourage exploration and development of the OCS. In particular, the minimum bid required for all blocks in OCS lease sales was lowered to $25 per acre from $150 per acre on a sale-by-sale basis.

Figure 7 (p. 19) showed the remaining prelease steps for each of the sales scheduled under the current 5-year program. Table 5 (p. 24) presented dates and citations for public notices on prelease steps that have already occurred for three of the six scheduled OCS lease sales.

OCS Lease Sale 91, Northern California

Proposed OCS Lease Sale 91, offshore northern California, was scheduled to be held in February 1989, but has been on hold. This sale is subject to the fiscal year 1990 Congressional Leasing Moratorium and is also being studied by the President's OCS Task Force. The task force report is due to the President January 1, 1990. The sale area covers 223 blocks, 1.1 million acres, ranging in water depth from 30 to 1,850 meters (100-6,070 feet) and from 3 to 27 miles offshore Humboldt and Mendocino Counties,

Table 7. *Top 25 companies holding interest in Pacific OCS leases, ranked by total acreage held, as of November 30, 1989*

Rank	Company	Number of leases held(1)	Total acres held(2)
1	Exxon Corporation	34	131,434
2	Chevron USA, Inc.	42	122,189
3	Shell Western E & P, Inc.	24	89,472
4	Phillips Petroleum Company	26	50,083
5	Union Oil Company of California	12	45,756
6	Sun Operating Limited Partnership	16	28,914
7	Atlantic Richfield Company	9	24,141
8	Texaco Inc.	12	19,148
9	Conoco, Inc.	8	18,762
10	Samedan Oil Corporation	17	17,909
11	Elf Aquitaine, Inc.	9	15,560
12	Exxon San Joaquin Production Company	19	13,021
13	Amoco Production Company	3	8,540
14	Amber Resource Company	10	6,276
15	Mobil Oil Corporation	2	4,584
16	Norcen Explorer, Inc.	3	4,278
17	Pennzoil Exploration & Production Company	3	4,261
18	Nippon Offshore California Oil Company, Ltd.	4	4,097
19	Idemitsu Oil Exploration (CA) Company	6	3,521
20	Mobil Exploration & Producing, N.A., Inc.	2	3,507
21	Union Pacific Resources Company	4	2,063
22	Santa Fe Energy Company	3	2,056
23	FMP Operating Company	2	1,958
24	OXY Usa Inc.	2	1,602
25	BP Exploration Inc.	2	1,599

(1) Number of leases in which company has a record title interest.

(2) Acreage totals based on percent of record title interest in leases held.

California. The Call for Information and Nominations and the Notice of Intent to Prepare an EIS were issued in the *Federal Register* in February 1986. The public scoping process included public meetings held in northern California and was concluded in December 1986. The draft EIS was issued in December 1987, and public hearings on the draft were held in February 1988. The final EIS cannot be issued until after FY 1990 and pending the results of the task force.

OCS Lease Sale 95, Southern California

OCS Lease Sale 95, proposed to be held in January 1990, has been on hold. This sale is also subject to the Fiscal Year 1990 Congressional Leasing Moratorium and is also being studied by the President's OCS Task Force. The task force report was due to the President January 1, 1990. The blocks proposed to be offered for sale are located between 3 and 130 miles offshore, in water depths from approximately 30 to 900 meters. The Call for Information and Nominations (which included 1,373 blocks) and the Notice of Intent to Prepare an EIS were issued in July 1987, followed by the Area Identification (which identified 1,317 blocks for further study) in September 1987. In November 1988, the MMS issued a Supplemental Call for Information covering 17 blocks excluded in the 1987 Call. The revised Area Identification has not been announced. As mentioned above, the DOI's FY 1990 Appropriations Act contains prohibitions on prelease and leasing activities for this sale. A draft EIS can be published 5 months after completion of the task force report.

Suspension of Production or Operations (250.10)

The Regional Supervisor of the Office of Field Operations may, on the Regional Supervisor's initiative or at the request of the lessee, suspend or temporarily prohibit production or any other operation or activity on all or any part of a lease (suspension) when the Regional Supervisor determines that such suspension is in the national interest and that the suspension is necessary as follows:

- To facilitate proper development of a lease including reasonable time to construct production facilities;
- To allow for the construction or negotiation for use of transportation facilities;
- To allow reasonable time to enter into a sales contract for oil or gas, or both, when good faith efforts to secure such contract(s) are made;
- To allow reasonable time to commence drilling operations when good faith efforts are prevented by reasons beyond the lessee's control, such as unexpected weather or unavoidable accidents; or
- To avoid continued operations which would result in premature abandonment of a producing well(s) or would not be economic.

Supplemental Sales (30 CFR 256.12)

Effective September 8, 1988, the MMS regulations provide for the conducting of supplemental OCS lease sales (53 FR 29884). These sales are designed to give the MMS the flexibility to accelerate the leasing process, on the basis of new geological and geophysical data, where there is a need.

Supplemental sales will be limited to the following:

- blocks for which previously offered bids have been rejected,
- blocks for which high bids have been forfeited, generally during the previous calendar year, and
- blocks designated as developmental, including those susceptible to drainage. This designation indicates that a block is located on the same geologic structure as an existing lease having a well with indicated hydrocarbons.

Supplemental sales are designed to be limited in scope to exclude blocks from the central and western Gulf of Mexico where annual OCS lease sales are conducted. The procedures for supplemental sales are similar to those for regular OCS lease sales.

OCS Lease Sale 119, Central California

OCS Lease Sale 119, proposed for March 1991, has also been on hold subject to the congressionally imposed leasing moratorium for FY 1990. The Call for Information and Nominations and Notice of Intent to Prepare an EIS were issued in November 1988, and included 338 blocks, approximately 17 million acres, between 3 and 45 miles offshore, in water depths ranging from approximately 30 to 900 meters. The next step, Area Identification, has not occurred.

As mentioned in chapter 1, Sale P1 was held in 1963. Sale P1 offered some of the same acreage being considered for Sale 119. Several of the wells drilled on P1 leases had shows of hydrocarbons, but none were considered commercial at the time and all of the P1 leases were relinquished prior to the end of their primary terms.

The Call for Information for OCS Lease Sale 119 introduced the Sensitive Tract Evaluation Process (STEP). The STEP provides public opportunity to identify and characterize tracts of environmental sensitivity and to help establish criteria to evaluate whether such tracts should be offered for lease.

Summary of Postlease Activities on the Pacific OCS

Most of the postlease activities that have occurred within the Pacific OCS Region have taken place on OCS leases in the Southern California OCS Planning Area (see table 8). Less than 10 percent of the exploratory wells drilled in the Pacific OCS Region have been drilled outside of the Southern California OCS Planning Area; none of these were drilled within the past two decades. All of the OCS development wells and subsequent production have also come from this planning area.

Figure 9 (p. 30) shows from the recent drilling history of the Pacific OCS Region a marked shift toward development drilling and away from exploratory drilling. A variety of factors have influenced this shift, such as (1) a significant drop in oil prices, (2) permitting impediments, and (3) lack of new OCS acreage normally made available through lease sales. The most recent sale held in the Pacific OCS Region occurred in 1984. There are five 10-year primary term OCS leases remaining: two from Lease Sale 68 due to expire July 3, 1992; and three from Lease Sale 80 due to expire November 30, 1994. The sidebar on 30 CFR 250 and 256 (p. 18) provides information regarding the MMS final rule on consolidated operational regulations (53 FR 10596).

Exploration

Between August 1, 1987, and November 30, 1989, OCS operators submitted three exploration plans to MMS (see table 9 on the next page for details). All three of these plans covered operations proposed for the following leases acquired during OCS Lease Sale 80: OCS-P 512 (Texaco), OCS-P 522 (Conoco), and OCS-P 525 (Chevron). In accordance with MMS procedures, these plans were forwarded to the CCC for a review of the consistency of the proposed operations

Table 8. *Summary of Pacific OCS oil and gas postlease activities through November 30, 1989*

Lease sale	Area	Approved plans of exploration (1)	Exploratory wells spudded (2)	Approved development and production plans(1)	Development wells spudded(3)	Cumulative crude oil production (bbl)(4)	Cumulative gas production (Mcf)(4)
P1	(1963) CA	n/a	20	n/a	0	0	0
P2	(1964) WA-OR	n/a	12	n/a	0	0	0
P3	(1966) S. CA	n/a	6	n/a	93	41,449,055	31,577,337
P4	(1968) S. CA	18	142	5	406	338,992,574	329,924,035
35	(1975) S. CA	6	41	2	131	39,736,422	14,087,668
48	(1979) S. CA	27	32	2	33	282,519	49,234,214
53	(1981) C. CA*	28	55	3	25	10,754,428	2,151,994
68	(1982) S. CA	11	17	0	0	0	0
RS-2	(1982) C. CA*	4	1	0	0	0	0
73	(1983) C. CA*	1	0	0	0	0	0
80	(1984) S. CA	2	1	0	0	0	0
	Totals	97**	327	12	688	431,214,998	426,975,248

(1) As of November 1, 1988. Only plans submitted subsequent to enactment of the OCS Lands Act Amendments of 1978 have been included in this table.
(2) As of November 30, 1989.
(3) As of November 30, 1989.
(4) As of December 31, 1988, includes crude oil, condensate gas, and casinghead gas; bbl = barrels; Mcf = thousand cubic feet.
(*) Planning area at the time of sale was called the Central and Northern California; all blocks leased are now within the Southern California Planning Area.
(**) Four plans cover leases from more than one sale.
n/a Not applicable.

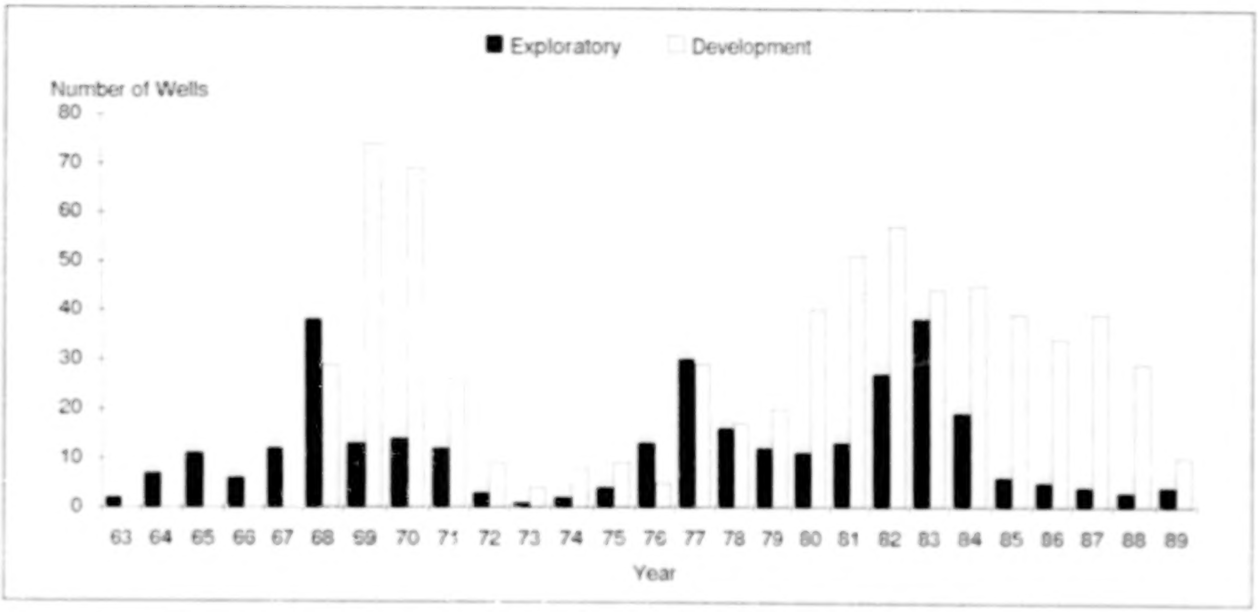


Figure 9. *Annual levels of exploratory and development well drilling in the Pacific OCS Region through November 30, 1989.*

with the California coastal zone management (CZM) program.

The CCC objected to the consistency certification for each of these plans and each operator's request for an individual National Pollutant Discharge Elimination System permit from the EPA. A timely review and objection to such exploration plans by the CCC prevents any other permits from being issued for the proposed project. After receiving an objection by the CCC to its consistency certification, an operator has three choices: (1) modify its plans to address the stated concerns of CCC; (2) appeal to the Secretary of the Department of Commerce; or (3) withdraw its proposed plan. Each of the three operators that submitted the exploration plans listed in table 9 on the next page have appealed the CCC objections to the Secretary of Commerce in accordance with the CZM Act (16 U.S.C. 1456) and its implementing regulations (15 CFR 930 Subpart H). On May 19, 1989, the Secretary of Commerce issued an affirmative override decision in favor of Texaco on its appeal for an exploration plan on lease OCS-P 512 on the basis that the proposed activity is consistent with the objectives or purposes of the Act. The other two appeals are still being reviewed by the Secretary.

The most heavily explored area of the OCS offshore California is the Santa Barbara Basin. Exploratory drilling began there in 1967 and has continued up to the present. Exploratory drilling elsewhere on the OCS offshore California has been concentrated for short periods of time. Almost 10 years after exploration began in the Santa Barbara Basin, operators expanded their activities to the San Pedro Basin offshore Los Angeles. More recently, in the period 1982-86, OCS operators focused on the Santa Maria Basin. Accordingly, development drilling has followed in each of these three basins.

Table 10 (p. 32) lists each of the Applications for Permit to Drill (APD) approved by the MMS from August 1, 1987, through October 31, 1989. As table 10 shows, most of the APD requests have been for development wells. Table 11 (p. 33) presents an historical summary of exploratory drilling based on official protraction diagram locations in the Pacific OCS Region (see also fig. 1, p. 2).

Table 9. *Exploration plans submitted to or approved by MMS from August 1, 1987, through November 30, 1989*

Lease OCS-P	UNIT/(field)	Legal description	No. of Wells	Operator	Submittal date	Approval date
0512	n/a	Block 5482, 6A	1 - 8	Texaco	09/16/87	10/16/87
0522	SMUGGLER'S COVE	Block 4966, 6B	1 - 6	Conoco	02/02/88	03/03/88
0525	ANACAPA	Block 4864, 6B	1 - 5	Chevron	03/01/88	03/31/88

n/a = Not applicable.

Table 12 (p. 33) presents data on those exploratory wells spudded between July 7, 1987, and October 31, 1989. Appendix B (p. 83) to this report provides similar data for all exploratory wells drilled on the Pacific OCS.

Discoveries

After an OCS operator has drilled a well that is capable of producing in paying quantities, it may request an extension of its primary lease term. This extension is accomplished through a suspension of production (SOP). The operator may request the SOP to allow it to further delineate or develop its prospect to the production stage. The term of each SOP varies so that the MMS may consider the unique factors affecting development of each prospect.

Effective May 31, 1988, the MMS changed its procedures for determining well producibility. Prior to that time, an OCS operator was required to submit to MMS an evaluation of each exploratory well that it drilled. This requirement was stated under what was then known as OCS Order No. 4. This OCS order, and all others, were incorporated in the MMS regulations beginning May 31, 1988. OCS Order No. 4 became 30 CFR 250.11, "Determination of Well Producibility." In accordance with the terms of 30 CFR 250.11, an operator may request that a determination of well producibility be made for any well that is drilled. Such a determination is the basis of MMS's decision to grant a suspension of production to allow time to develop the lease.

Once an operator determines that enough information is available to allow successful field development, it must submit a development and production plan for MMS approval. After reviews by the MMS, other Federal agencies, and responsible State officials, a plan may be approved. If a plan is approved, the operator proceeds in an orderly manner (1) to construct and install its production platform, (2) to obtain approval of individual APD's and drill the required development wells to completion, (3) to install the appropriate pipelines and any necessary onshore facilities, and (4) to begin production.

There are currently 1 central processing and 20 production platforms fully installed in the Pacific OCS Region, as well as a floating storage and treating vessel; all lie offshore southern California. Table 13 (p. 35) presents a brief history for each of these platforms, as well as their locations. On June 21, 1989, Exxon installed the jacket for Platform Harmony in the Santa Ynez Unit in Federal waters near Gaviota, California. On October 7, 1989, the jacket for Platform Heritage was installed in the Santa Ynez Unit on lease OCS P-0182. An additional platform is planned and approved for installation within the Santa Ynez Unit. (See related discussion on the Santa Ynez Unit in ch. 3, p. 52.) Another platform received approvals from both Federal and State officials, but its installation cannot pro-

Table 10. *Applications for Permit to Drill approved by MMS, by unit or field, from August 1, 1987, through November 30, 1989*

UNIT/(field)	Lease OCS-P	Platform	Well no.(1)	Operator	Approval date
ANACAPA	0178		002	Chevron	10/27/88
			003	Chevron	02/24/89
CASTLE ROCK	0321		003	Chevron	08/29/88
(Dos Cuadras)	0240	Henry	A051	Oryx	12/0[illegible]/87
	0240	Henry	A052	Oryx	12/11/87
(Point Arguello)	0315	Harvest	A008	Texaco	08/14/87
	0315	Harvest	A009	Texaco	08/21/87
	0315	Harvest	A010	Texaco	10/27/87
	0315	Harvest	A011	Texaco	11/04/87
	0315	Harvest	A012	Texaco	11/25/87
	0315	Harvest	A013	Texaco	12/15/87
	0315	Harvest	A014	Texaco	12/23/87
	0315	Harvest	A015	Texaco	01/13/88
	0315	Harvest	A016	Texaco	02/04/88
	0315	Harvest	A017	Texaco	02/12/88
	0315	Harvest	A018	Texaco	03/11/88
	0315	Harvest	A019	Texaco	04/14/88
	0316	Hermosa	B005	Chevron	08/11/87
	0316	Hermosa	B006	Chevron	11/05/87
	0316	Hermosa	B008	Chevron	02/17/88
	0316	Hermosa	B009	Chevron	03/31/88
	0316	Hermosa	B010	Chevron	05/12/88
	0316	Hermosa	B011	Chevron	06/09/88
	0316	Hermosa	B012	Chevron	07/22/88
	0316	Hermosa	B013	Chevron	07/29/88
	0450	Hidalgo	C001	Chevron	11/20/87
	0450	Hidalgo	C002	Chevron	01/07/88
	0450	Hidalgo	C003	Chevron	02/29/88
	0450	Hidalgo	C004	Chevron	05/06/88
	0450	Hidalgo	C005	Chevron	06/20/88
	0450	Hidalgo	C006	Chevron	08/30/88
	0451	Hidalgo	C007	Chevron	11/01/88
(Point Pedernales)	0441	Irene	A018	Unocal	10/10/89
GATO CANYON	0460		002	Samedan	12/22/88
POINT HUENEME	0203	Gina	H013	Unocal	03/15/88
	0203	Gina	H014	Unocal	08/05/88
ROCKY POINT	0451	Hermosa	B007	Chevron	12/21/87
SANTA CLARA					
(Santa Clara)	0216	Gilda	S052	Unocal	08/24/87
	0216	Gilda	S067	Unocal	11/04/87
	0216	Gilda	S069	Unocal	11/03/89
	0216	Gilda	S071	Unocal	11/08/89
(Sockeye)	0205	Gail	E001	Chevron	06/09/88
	0205	Gail	E003	Chevron	09/08/88
	0205	Gail	E004	Chevron	10/21/88
	0205	Gail	E005	Chevron	11/16/88
	0205	Gail	E010	Chevron	11/01/89
	0209	Gail	E002	Chevron	07/29/88
SANTA YNEZ	0196		001	Exxon	06/08/88
(Hondo)	0188	Hondo	H033	Exxon	11/04/87
	0188	Hondo	H034	Exxon	04/01/88
	0188	Hondo	H035	Exxon	10/02/88
	0188	Hondo	H036	Exxon	07/13/88
SMUGGLER'S COVE	0475		001	Conoco	09/13/89
	0469		002	Arco	
	0512		001	Texaco	10/30/89

(1) Well numbers preceded by a letter are development wells; those without are exploratory wells.

Table 11. *Exploratory wells drilled in the Pacific OCS Region, by OPD location number, through November 30, 1989*

[Includes two deep stratigraph test exploratory wells (6D, 1975 and N1 10-6, 1978)]

OPD No.	Year Spudded '63	'64	'65	'66	'67	'68	'69	'70	'71	'72	'73	'74	'75	'76	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89*	Total Wells
6A						9	7	9	11	2					1	4	1	7	10	10	7	1	2		1	2	2	86
6B					6	29	6	5	1	1	1	2	4	5	6	8	9	3	2	4	6	8		2	2	1	3	114
6C														7	19	4	1		1									32
6D													1	1	4		1	1										8
NI 10-3		1																		1	3	1	1	1				8
NI 10-6																1				12	22	9	3	2	1			50
NJ 10-2			1	2																								3
NJ 10-5	1	4	2		1																							8
NJ 10-8	1		1		2																							4
NK 10-1					1																							1
NK 10-7		2	2																									4
NL 10-4			1	3	2																							6
NL 10-10			4	1																								5
Yearly Total	2	7	11	6	12	38	13	14	12	3	1	2	5	13	30	17	12	11	13	27	38	19	6	5	4	3	5	329

* Data through November 30, 1989

Table 12. *Exploratory wells spudded on the Pacific OCS as of November 30, 1989*

Lease number (OCS-P)	Block number	OPD number	Lease status (1)	Operator	Well number	Spud date	Date plugged and abandoned	Water depth (ft)	Total depth (ft)
0456	5586	6A	R	Texaco	1	07/07/87	09/29/87	1,402	10,155
0196	5380	6A	A	Exxon	1	06/13/88	09/18/88	323	10,135
0321	5483	6A	A	Chevron	3	09/01/88	10/25/88	840	11,690
0478	4863	6B	A	Chevron	2	10/29/88	2/24/89	380	14,057
0478	4863	6B	A	Chevron	3	02/24/89	04/10/89	380	13,795
0460	5372	6A	A	Samedan	2	01/09/89	04/12/89	573	7,210
0475	4866	6B	A	Conoco	1	09/22/89	11/19/89	830	9,240
0512	5482	6B	A	Texaco	1	10/30/89		319	

(1) A = Active; R = Relinquished

ceed until the operator receives approval from the coastal county where it has proposed to locate its onshore treatment facilities. (See related discussion on the San Miguel field project, p. 55.) Several other platforms have been discussed by various operators for leases in the Santa Maria Basin; however, these operators have not officially begun the development plan review and approval process that would lead to platform installation. Table 14 (p. 36)presents currently known information about the platforms proposed to be installed in the Pacific OCS Region.

Unitization

A unit is formed on the OCS to expedite and promote exploration and development efforts. Unitization may be approved or required for the prevention of waste, the conservation of natural resources, and the protection of correlative rights.

There are 19 active unit agreements in the Pacific OCS Region. Background information on each of these units is presented in Appendix C, p. 89. The 19 Pacific OCS Region units cover all or portions of 108 of the 123 existing leases therein. Two of these units, Bonito and Smuggler's Cove, contain a portion of an unleased block. The Point Hueneme and the Mussel Rock unit agreements are the newest in the Pacific OCS Region. The former was approved for three Federal leases adjacent to Oxnard and Point Hueneme on February 29, 1988. This unit comprises leases OCS-P 0202, 0203, and 0479. Unocal, the designated operator for the Point Hueneme Unit, installed Platform Gina on lease OCS-P 0202 during 1980 to develop the Hueneme field. The field was discovered on leases OCS-P 0202 and 0203 in 1969; production commenced in 1982. After a discovery well was made on lease OCS-P 0479, in 1987, Unocal arranged the unit agreement. The Mussel Rock Unit was approved January 31, 1989, and covers leases OCS-P 0504 and 0505 in the northern Santa Maria Basin. Texaco is the operator. There are currently no platforms on either lease.

Development and Production

After installing an offshore platform, the operator applies for approval for each of its development wells. To efficiently produce the field, the operator drills numerous development wells from each platform. Though the influence of lower oil and gas prices has dramatically affected exploratory drilling, the levels of development drilling have been relatively constant for the past 6 years (see fig. 9, p. 30). This difference reflects the fact that at the development stage, having persevered through the lengthy permit process, an operator is much closer to being able to recoup some of the substantial investment in a project.

Following successful development drilling, produced hydrocarbons are frequently transported to shore in pipelines for processing and subsequent refining. Some preliminary processing may be done offshore on the production platform depending on the quality of the hydrocarbons, available transportation network, proximity of an operator's onshore processing facilities, and the facilities' capabilities. All of the production projects in the Pacific OCS Region are located in the Southern California OCS Planning Area. A separate, oversized map plate displaying, southern California offshore oil and gas activities and their onshore facilities is available from the following address and telephone number:

Document Distribution Center
Minerals Management Service, MS 4610
381 Elden St.
Herndon, VA 22070-4817
(703) 787-1080

Production of crude oil and condensate from producing fields in the Pacific OCS Region during calendar year 1987 averaged over 85 thousand barrels per day (Mbpd)—an increase of over 8 percent from 1986 production levels. Then in 1988, production

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Table 13. *Existing platforms and development wells spudded on the Pacific OCS as of November 30, 1989*

Platform (Operator)	Jacket fabrication site	Deck fabrication site	Lease OCS-P	OPD	UNIT/(field)	No. of well slots	No. of development wells spudded by year (1)																						
							68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89*	Total
Edith (Unocal)	Japan	Vallejo, CA	0296	6C	BETA/(Beta)	72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	11	8	0	—	—	—	21
Ellen (SWEPI)	Malaysia	Japan	0300	6C	BETA/(Beta)	80	—	—	—	—	—	—	—	—	—	—	—	—	8	21	21	6	8	0	1	1	—	—	66
Elly(2) (SWEPI)	Malaysia	Japan	0300	6C	BETA/(Beta)	n/a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0
Eureka (SWEPI)	Vallejo, CA	Morgan City, LA	0301	6C	BETA/(Beta)	60	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	16	18	9	—	—	44
Gail (Chevron)	Japan	Stockton, CA	0205	6B	SANTA CLARA/(Sockeye)	36	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	3	9
Gilda (Unocal)	Japan	Japan	0216	6B	SANTA CLARA/(Santa Clara)	96	—	—	—	—	—	—	—	—	—	—	—	—	—	2	8	20	16	9	4	3	—	1	63
Gina (Unocal)	Japan	Japan	0202	6B	POINT HUENEME/ (Hueneme)	15	—	—	—	—	—	—	—	—	—	—	—	—	—	2	9	1	0	0	0	—	2	—	14
Grace (Chevron)	Japan	Anacortes, WA	0217	6B	SANTA CLARA/(Santa Clara)	48	—	—	—	—	—	—	—	—	—	—	—	—	9	8	7	5	5	0	0	—	—	—	34
Habitat (Texaco)	Japan	Vallejo, CA	0234	6B	PITAS POINT/(Pitas Point)	24	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5	5	3	3	1	—	—	—	17
Harvest (Texaco)	Korea	Korea	0315	6A	(Point Arguello)	50	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	12	5	—	19
Henry (Oryx)	Vallejo, CA	San Bernadino, CA	0240	6B	(Carpinteria Offshore)	24	—	—	—	—	—	—	—	—	—	—	—	—	9	13	3	0	0	0	0	—	—	—	25
Hermosa (Chevron)	Japan	Morgan City, LA	0316	6A	(Point Arguello)	48	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	6	6	—	12
Hidalgo (Chevron)	Japan	Vallejo, CA	0450	NI 10-6	(Point Arguello)	56	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	6	—	7
Hillhouse (Oryx)	Oakland, CA	Oakland, CA	0240	6B	(Dos Cuadras)	60	—	—	18	24	0	1	0	1	1	1	0	0	0	0	0	0	1	1	0	1	1	—	50
A (Unocal)	Vancouver, WA	Vancouver, WA	0241	6B	(Dos Cuadras)	57	3	16	26	1	1	1	4	6	3	1	1	1	0	0	0	1	0	0	0	—	—	—	65
B (Unocal)	Vancouver, WA	Vancouver, WA	0241	6B	(Dos Cuadras)	63	—	17	25	1	8	2	3	2	1	1	2	2	1	1	0	1	0	0	0	—	—	—	67
C (Unocal)	Vancouver, WA	Vancouver, WA	0241	6B	(Dos Cuadras)	60	—	—	—	—	—	—	—	—	—	21	2	4	0	0	0	0	0	0	0	—	—	—	27
Hogan (Phillips)	Morgan City, LA	Morgan City, LA	0166	6B	(Carpinteria Offshore)	66	26	12	0	0	0	0	0	0	0	3	7	2	0	0	0	0	0	0	0	—	—	—	50
Hondo(3) (Exxon)	Oakland, CA	Morgan City, LA	0188	6A	SANTA YNEZ/(Hondo)	28	—	—	—	—	—	—	—	—	—	2	5	5	6	4	4	3	0	2	0	2	3	1	37
Houchin (Phillips)	Morgan City, LA	Morgan City, LA	0166	6B	(Carpinteria Offshore)	60	—	29	0	0	0	0	1	0	0	0	0	6	7	0	0	0	0	0	0	—	—	—	43
Irene (Unocal)	Japan	Japan	0441	NI 10-6	POINT PEDERNALES/ (Point Pedernales)	72	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8	4	—	6	18
						Total	29	74	69	26	9	4	8	9	5	29	17	20	40	51	57	44	45	39	34	39	29	11	688

(1) The annual well count is determined by spud date. Well count includes all producing and shut-in oil and gas wells and those wells that are either plugged and abandoned, suspended, or actively drilling.

(2) Platform Elly is a processing platform from which no wells will be drilled. Only initial treatment and storage will be done there.

(3) Also on this lease Exxon operates an offshore storage and treating vessel (OS&T) that separates and treats production from Platform Hondo.

n/a = Not applicable.

* Data through November 30, 1989

Table 14. *Platforms proposed to be installed in the Pacific OCS Region as of November 30, 1989*

Platform	Operator	Origin of jacket fabrication	Origin of deck fabrication	Lease OCS-P	UNIT/(field)	Number of well slots	Water depth (ft)	First production
Heritage*	Exxon	Korea	Korea	0182	SANTA YNEZ/(Pescado)	60	1,075	1992
Heather	Exxon	(**)	(**)	0193	SANTA YNEZ/(Sacate)	28	620	?
Julius	SWEPI	Korea		0409	(San Miguel)	70	478	?
Iris(1)	Unocal	(**)	(**)	0440	PT. PEDERNALES/ (Pt. Pedernales)	60	285	?

(1) Previous operator (Exxon) called it Independence.
(*) Jacket installed October 7, 1989.
(**) Construction has not commenced.

increased slightly to about 86 Mbpd. The 1988 production rate set a new record for the Pacific OCS Region (see table 15 on the next page). Much of this increased production can be attributed to the startup of Platform Irene in the Point Pedernales Unit. The Pacific OCS Region currently accounts for slightly less than 10 percent of the crude oil and condensate produced from the OCS nationwide.

Production of natural gas from the Pacific OCS Region declined approximately 30 percent between 1985 the peak year and 1988. Converting gas production to barrels of oil equivalents, using 6 thousand cubic feet (Mcf) per barrel of oil equivalent (BOE) and combining this with the figures for oil and condensate produced, the Pacific OCS Region accounted for more than 110 thousand barrels of oil equivalent (MBOE) per day during 1987.

The startup of OCS production projects, specifically Point Arguello in 1990 and the further development of Santa Ynez in 1992 (see related discussions in ch. 3, p. 49), will begin to significantly increase the production from the Pacific OCS during the next 5 years. Production rates from this OCS region are expected to double by 1992 or 1993. Because of the dramatic effect that reduced oil prices have had, however, these projections are substantially less than those made several years ago.

Transportation

Pipelines

Both the State of California and the Federal Government have identified pipelines as the preferred mode for transporting crude oil production from offshore development projects to processing facilities. Accordingly, the majority of crude oil and all natural gas produced offshore California is transported to shore-based processing facilities. The two exceptions are Exxon's transporting crude oil to the OS&T vessel and SWEPI's platform Elly as an offshore processing unit in the Beta field.

At issue is the mode of transportation employed after treated crude oil leaves a processing facility for its target refinery. In some cases, industry may not have an onshore pipeline network available that could send [illegible] oil to a specific refinery. They, therefore, may make an economic decision to tanker the crude oil rather than attempt to obtain permits and construct a pipeline. The State of California prefers to have all crude oil transported by pipeline.

Table 15. *California's contribution to national production from the OCS through 1988*

Year	Oil and Condensate (bbl)				Natural Gas (Mcf)				Year
	National OCS production	California OCS production	Percent of national	Production change (+/-) (*)	National OCS production	California OCS production	Percent of national	Production change (+/-) (*)	
1968 (1)	268,995,890	2,076,160	0.77		1,524,178,078	1,237,180	0.08		(1) 1968
1969 (2)	312,859,987	9,942,733	3.18	378.90	1,954,486,975	6,016,485	0.31	386.31	(2) 1969
1970 (3)	360,646,168	25,035,171	6.94	151.79	2,418,676,591	13,757,148	0.57	128.66	(3) 1970
1971	418,548,946	31,103,681	7.43	24.24	2,777,043,418	17,853,055	0.64	29.77	1971
1972	411,885,893	22,562,566	5.48	-27.46	3,038,554,773	12,546,915	0.41	-29.72	1972
1973	394,729,999	18,818,026	4.77	-16.60	3,211,588,422	9,157,714	0.29	-27.01	1973
1974	360,594,065	16,784,100	4.65	-10.81	3,514,723,907	7,234,937	0.21	-21.00	1974
1975	330,237,452	15,434,507	4.67	-8.04	3,458,693,454	5,978,959	0.17	-17.36	1975
1976	316,920,109	13,977,436	4.41	-9.44	3,595,923,526	5,533,258	0.15	-7.45	1976
1977 (4)	303,948,240	12,258,013	4.03	-12.30	3,737,746,922	5,366,181	0.14	-3.02	(4) 1977
1978	292,265,042	11,979,674	4.10	-2.27	4,385,060,878	5,193,985	0.12	-3.21	1978
1979	285,565,538	10,971,013	3.84	-8.42	4,672,979,139	5,430,689	0.12	4.56	1979
1980 (5)	277,388,975	10,118,614	3.65	-7.77	4,641,456,983	5,771,792	0.12	6.28	(5) 1980
1981 (6)	289,765,405	19,619,670	6.77	93.90	4,849,536,728	12,769,110	0.26	121.23	(6) 1981
1982 (7)	321,211,457	28,471,665	8.86	45.12	4,679,511,272	17,814,958	0.38	39.52	(7) 1982
1983 (8)	348,331,243	30,558,866	8.77	7.33	4,040,733,857	23,923,258	0.59	34.29	(8) 1983
1984 (9)	370,239,014	30,500,506	8.24	-0.19	4,537,841,051	45,912,435	1.01	91.92	(9) 1984
1985 (10)	386,324,285	29,674,099	7.68	-2.71	4,000,975,226	63,523,094	1.59	38.36	(10) 1985
1986	389,216,002	28,779,968	7.39	-3.01	3,948,895,001	58,003,369	1.47	-8.69	1986
1987 (11)	366,141,709	31,284,618	8.54	8.70	4,425,581,690	54,874,298	1.24	-5.39	(11) 1987
1988	320,667,424	31,529,776	10.17	-2.81	4,309,874,827	49,132,759	0.80	-15.65	1988
Totals	7,126,482,843	431,480,862	6.05		77,724,062,718	427,031,579	0.55		

(1) Initial production: Platform Hogan
(2) Initial production: Platforms Houchin and A
(3) Initial production: Platforms Hillhouse and B
(4) Initial production: Platform C
(5) Initial production: Platforms Henry and Grace
(*) Increase or decrease from previous year.
(6) Initial production: Platforms Hondo, Ellen, and Gilda
(7) Initial production: Platform Gina
(8) Initial production: Platform Habitat
(9) Initial production: Platform Edith
(10) Initial production: Platform Eureka
(11) Initial production: Platform Irene

Note: These production figures represent "sales" production not total volumes produced.

Currently, the Point Arguello project has stalled because of this transportation issue (see ch. 3, p. 49, for further information).

Table 16 on the next page presents information on both existing and proposed pipelines on the OCS offshore California. This information is graphically depicted on a map plate that is available from the following address and telephone number:

Document Distribution Center
Minerals Management Service, MS 4610
381 Elden St.
Herndon, VA 22070-4817
(703) 787-1080

No OCS pipeline permit requests were submitted to, or approved by, the MMS during the period of this report. More specific information on the development projects for which these pipelines were required is presented in Chapter 3 of this report. Within the next 2 to 3 years, it can be anticipated that several new pipelines will be installed on the Pacific OCS offshore Southern California. The Santa Ynez Unit and the San Miguel field development projects will be required to ship their production to shore through such pipelines. (See table 14, p. 36, or ch. 3 for more information on these projects.)

The advancement of various development projects in the northern Santa Barbara Basin and the southern Santa Maria Basin has provided the impetus to develop several onshore pipeline projects designed to transport crude oil from processing facilities to refineries. As reported in the last Pacific Summary Report, three major pipeline projects were in various stages of development. These projects were the All American

Table 16. *Existing and proposed OCS pipelines offshore Callifornia as of November 30, 1989*

UNIT/ (Field)	Platform	Pipeline operator	Landfall	Size and type	Status
SANTA YNEZ	Hondo(1) to shore	POPCO	Las Flores Canyon	12-in gas	Operating
(Hondo)	Hondo to OS&T	Exxon		12-in oil 6-in fuel 8-in water	Operating
(Dos Cuadras)	C to B	Unocal	____(2)	6-in oil 6-in gas 6-in water	Operating
(Dos Cuadras)	B to A to Shore	Unocal	Rincon	12-in oil 12-in gas 6-in water	Operating
(Dos Cuadras)	A to Hillhouse	Oryx	____(2)	8-in oil 8-in gas 6-in water	Operating
(Dos Cuadras/ Carpinteria Offshore)	Hillhouse to Henry	Oryx	____(2)	8-in oil 6-in gas 8-in water	Operating
(Carpinteria Offshore)	Hogan to Houchin to shore	Phillips	La Conchita	10-in oil 12-in gas 10-in gas lift 4-in water	Operating
PITAS POINT/ (Pitas Point)	Habitat to shore	Pacific Interstate Offshore Company	Carpinteria	12-in gas	Operating
SANTA CLARA/ (Sockeye)	Gail to Grace	Chevron	____(2)	8-in oil 8-in gas 8-in service	Operating
SANTA CLARA/ (Santa Clara)	Grace to Hope (State waters) Hope to shore	Chevron	Carpinteria	12-in oil(3) 10-in gas(3) 10-in oil 10-in gas 10-in gas lift	Operating
SANTA CLARA/ (Santa Clara)	Gilda to shore	Unocal	Mandalay Beach	12-in oil 10-in gas 6-in water	Operating
POINT HUENEME	Gina to shore	Unocal	Mandalay Beach	10-in oil/ gas (4) 6-in water	Operating
BETA/(Beta)	Ellen to Elly	SWEPI	____(2)	14-in oil 4-in gas	Operating
BETA/(Beta)	Elly to shore	SWEPI	Long Beach	16-in oil	Operating
BETA/(Beta)	Eureka to Elly	SWEPI	____(2)	12-in oil 6-in gas 10-in water	Operating
BETA/(Beta)	Edith to Elly	Unocal	____(2)	6-in oil	Operating
BETA/(Beta)	Edith to Eva (State waters) to shore	Unocal	Huntington Beach	6-in gas	Operating
(Point Arguello)	Hermosa to shore	Chevron	Point Conception	24-in oil 20-in gas	Installed
(Point Arguello)	Harvest to Hermosa	Texaco	____(2)	12-in oil 8-in gas	Installed
(Point Arguello)	Hidalgo to Hermosa	Chevron	____(2)	16-in oil 10-in gas	Installed
POINT PEDERNALES	Irene to shore	Unocal	Vandenberg Air Force Base	20-in oil 8-in gas 8-in water	Operating
POINT PEDERNALES	Iris to Irene	Unocal	____(2)	10-in oil 6-in gas	Proposed
(San Miguel)	Julius to shore	SWEPI	Guadalupe Field	20-in oil 10-in water 8-in service/ fuel	Proposed

(1) Oil from Platform Hondo is stored and treated on an offshore storage and treatment vessel, then offloaded on tankers. Additional platform and pipeline emplacement options for the Santa Ynez Unit are currently under review.
(2) Indicates pipeline links two platforms.
(3) Lines from Platform Grace to Platform Hope.
(4) One line carries oil and gas.

Pipeline (formerly Celeron), the Pactex Pipeline, and the Southern California Pipeline System. Currently, the All American is the only pipeline project of the three that is proceeding. More information on each of these pipeline projects is presented in chapter 3 of this report.

Marine Vessel Traffic Lanes

The Ports and Waterways Safety Act (PWSA), 33 U.S.C. 1223(c), authorizes the Secretary of the Department of Transportation (DOT) to establish traffic separation schemes (TSS's) and shipping safety fairways for safe access to and from U.S. ports. The Coast Guard is the agency within DOT responsible for shipping safety. To be internationally recognized, a TSS must be approved by the International Maritime Organization (IMO). Use of TSS's is voluntary.

Presently, there are three IMO-approved TSS's and one shipping safety fairway off the coast of California. The TSS's are at the approach to San Francisco Bay, through the Santa Barbara Channel, and at the approach to the Ports of Los Angeles and Long Beach. The shipping safety fairway is off Port Hueneme in Ventura County. Where the primary risk is collision between vessels, a TSS is the preferred routing measure. Where the primary risk to vessels is collision with offshore structures, a shipping safety fairway is the preferred measure. Shipping safety fairways prohibit fixed structures, both temporary and permanent. Precautionary areas exist at the approaches to the Ports of Los Angeles and Long Beach and to San Francisco Bay. The precautionary areas mark the convergence of inbound and outbound traffic lanes.

On April 27, 1989, the Coast Guard published proposed amendments to the existing TSS and new shipping safety fairways. The new fairways would connect the existing San Francisco TSS with the existing Santa Barbara Channel TSS and would overlay the existing precautionary areas in the approaches to Los Angeles and Long Beach and to San Francisco (54 FR 18258). These proposals are undergoing public review. For further information, contact Margie C. Hegy of the Coast Guard at (202) 267-0415.

Onshore Support, Treating, and Refining Facilities

Searching for and subsequently developing and producing successful finds of offshore hydrocarbons require substantial support from shore-based facilities. These shore-based facilities include (1) major supply bases, (2) crew and light supply bases, (3) fabrication and assembly facilities, and (4) separation, treatment, and refining facilities.

Both major supply and crew and light supply bases are generally located as close to the respective offshore exploration/development projects as opportunity allows because these facilities move supplies and personnel via ship or helicopter on a frequent basis. The high cost of supplying remote offshore projects negatively affects the economics of any proposed development. There is usually more flexibility in the location for crew and light supply bases because these resources are often transported via helicopter, as compared with the heavier items that require shipment via supply boat from a major supply base having cranes. Remote supply operations are more likely for a short term exploration project than for a development and production project where these transportation costs are a major economic consideration over the life of a project.

There are three major areas of current offshore exploration and development in the Pacific OCS Region. These are the San Pedro Basin, the Santa Barbara Basin, and the Santa Maria Basin. San Pedro Basin operations are based out of ports in the Los Angeles area. The distances from these support centers to offshore projects are small relative to projects in the other basins. The

Los Angeles area supply bases serve the Beta Unit in Federal waters and platforms Emmy and Eva in State waters. Operations in both Federal and State waters of the Santa Barbara Basin are conducted largely from the support base of Port Hueneme, with additional support from various private and public terminals, and from the Santa Barbara airport. Port Hueneme also serves those projects further north in the Santa Maria Basin, especially with respect to the heavier items that are transported by ship. The lack of a suitable support facility in the Point Conception area requires operators to transport heavy equipment and supplies considerable distances from Port Hueneme. However, crew and light supplies are frequently transported from nearby Lompoc and Santa Maria airports.

Foreign shipyards have constructed most of the production platform jackets and many of the topside components for development projects in the Pacific OCS Region (refer to tables 13 and 14). The placement of orders in these yards has been driven by their competitiveness and by the limited number of adequate west coast domestic fabrication facilities. The placement of foreign orders has resulted in various proposals and legislative initiatives requiring the use of domestic products. The impact of these proposals has been examined in a recent study by the Congressional Office of Technology Assessment (see the "Additional Reading" section at the end of this chapter).

Hydrocarbons produced offshore require processing prior to their eventual sale. Oil emulsion must be processed to separate crude oil from gas, condensate, water, sulphur, and basic sediment prior to shipment to refineries. Raw gas must also be processed, separating out sulphur, condensate, and water prior to introduction to various sales gas lines or prior to extraction into its constituent components (e.g., methane, butane, propane). In view of California's long history as an oil producing State, many onshore processing facilities of various ages exist. The onshore processing and refining facilities adjacent to the San Pedro Basin are well developed. Much of the production from this area can be transported by pipeline to refineries and gas processing plants. Similarly, processing facilities in the tri-county area (Ventura, Santa Barbara, and San Luis Obispo) are in various stages of maturity. Because of numerous discoveries over the past 20 years off of Santa Barbara, San Luis Obispo, and Ventura Counties, several development plans have proposed facilities to do some preliminary processing. Some facilities had their capacities upgraded over the years to handle increased production whereas others are totally new facilties. The status of these facilities are discussed in greater detail in chapter 3.

Table 17 on the next page lists the onshore processing and upgrading facilities located adjacent to the tri-county area that process hydrocarbons produced offshore California, both in State and Federal waters. Table 18 (p. 42) presents the list of active Pacific coast refineries and their current capacities. As of January 1, 1989, the operable crude oil distillation capacity declined for the nation, as well as California. United States refineries processed 15.7 MMbpcd, down 1.3 percent, while refineries in the Pacific OCS Region processed a total of 2.2 MMbpcd (or 14 percent of total U.S. capacity), which is down from the 2.8 MMbpcd of 1988 (or 21 percent). The number of refineries in operation in the United States also decreased from 213 to 204, 11 being shut down and 2 reactivated. The net effect was a reduction of operable crude oil distillation capacity of about 67 Mbpcd. Table 19 (p. 43) presents the number of active U.S. refineries and their aggregate capacities by year. Chevron U.S.A. performed major streamlining activities at several plants resulting in reductions in operable capacity of 242 Mbpcd. The largest of these reductions occurred at Chevron's Richmond refinery in California, which permanently shut down 80 Mbpcd. The total refinery capacity for the United States has dropped 16 percent since

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Table 17. *Plants processing California offshore hydrocarbons in the Tri-County area*

[Oil in thousand barrels per day; gas in million cubic feet per day]

County	Location	Plant name (Proposed)	Operator	Year built	Design/Permit capacity (oil/gas)	1988 Throughput (oil/gas)	Status (***)	UNIT/(field)	Platform (proposed)	Operations (*)	Post process/ destination or distributor
**	**	**	SWEPI	**	40/0	0/0	**	(San Miguel)	(Julius)	1	crude/Celeron
SLO	Nipomo Mesa	Santa Maria Refinery "upgrader"	Unocal	1955	44/0	19/0	A	Pt. PEDERNALES	Irene	3	crude/barge to L.A. and pipeline to San Fran.
SBA	Lompoc	Lompoc	Unocal	1987	36-42/0	9.0/0	A	Pt. PEDERNALES	Irene	1	crude/Santa Maria &
SBA	Gaviota	Gaviota Oil/Gas Processing Facility	Chevron	1987	250/120	0/0	C	(Pt. Arguello)	Hermosa, Hidalgo & Harvest	1 & 2	crude/Gaviota or Celeron gas/Distrib. by SoCAL
SBA	Gaviota	Gaviota	ARCO	1962	n/a	.12/.075	A	(Alegria Offshore)	subsea completions	1 & 2	crude/trucked out
SBA	Santa Maria	Battles Gas Plant	Unocal	1937	0/30	0/11.5	A	Pt. PEDERNALES	Irene	2	gas/distrib. by SoCAL
SBA	Government Point	Pt. Conception Plant	Unocal	1968	1/40	.32/.06	A	(Pt. Conception)	Onshore (Directional)	1	crude/barge to L.A.
SBA	Canada de la Huerta	Molino	SWEPI	1964	30/30-115	0/3	A	(Molino Offshore)	(Hercules) subsea completions	1 & 2	gas/distrib. by SoCAL crude/barge to L.A.
SBA	Tajiguas	Tajiguas Facility	Phillips	1964	0/30	0/10-15	A	(Molino Offshore)	subsea completions	2	gas/distrib. by SoCAL
SBA	Las Flores Canyon	POPCO Facility	POPCO	1983	60/30	0/30	A	SANTA YNEZ/(Hondo)	Hondo	1 & 2	gas/distrib. by SoCAL
SBA	Las Flores Canyon	(Las Flores Canyon Facility)	Exxon	**	140/21	0/0	C	SANTA YNEZ/(Hondo)	Hondo, (Heritage), (Harmony), (Heather)	1 & 2	gas/Las Flores Gas Fac. crude/Celeron
SBA	Las Flores Canyon	(Las Flores Canyon)	ARCO	**	80/150	0/0	D	(Coal Oil Point)	Holly, Holly B.	1 & 2	crude/proposed Ellwood
SBA	Ellwood	Ellwood	ARCO	1966	20/20	8/7	A	(Coal Oil Point)	Holly, Seep	1	gas/distrib. by SoCAL
SBA	Dos Pueblos	Dos Pueblos	ARCO	1938	.5-.6/0	.1/0	A	(S. Ellwood Off.)	Onshore (Directional)	1	crude/barge to L.A.
SBA	Carpinteria	Carpinteria Plant	Chevron	1967	30/23	0/6	A	PITAS PT. & SANTA CLARA/Carpinteria & Summerland Offshore	Habitat, Heidi, Hope,	1 & 2	gas/distrib. by SoCAL
VEN	La Conchita	La Conchita Plant	Phillips	1969	27/22	1.8/1.3	A	(Carpinteria)	Houchin, Hogan	1	gas/kept for gas lift
VEN	Rincon	Rincon Onshore Facility	Mobil	1969	36/60	10.8/28	A	(Dos Cuadras) (Rincon Offshore)	Hillhouse, A, B, & C Rincon Island, Henry	1 & 2	gas/distrib. by SoCAL crude/Mobil west coast
VEN	Mandalay Beach	Mandalay Beach Facility	Unocal	1981	36/2	8.2/10.6	A	SANTA CLARA/ (Hueneme)	Gilda, Gina	1 & 2	gas/distrib. by SoCAL crude/barge to L.A.

SBA = Santa Barbara; SLO = San Luis Obispo; VEN = Ventura.

(*) 1 = Separation/Treatment; 2 = Gas Processing; 3 = Cru (***) A = Active; C = Construction; D = Denied; P = Permitting; W = Withdrawn

(**) Originally proposed for SLO County but defeated by vote n/a Not available.
SWEPI is currently seeking another site.

Source of State information: California Division of Oil and Gas/Individual Operators

Table 18. *Pacific Coast refineries and their operable atmospheric crude oil distillation capacity on January 1, 1987, 1988, and 1989*

Company	Location	1987 Crude capacity (bpcd)(1)	1988 Crude capacity (bpcd)(1)	1989 Crude capacity (bpcd)(1)
CALIFORNIA				
ARCO	Carson (2)	216,000	214,000	214,000
Beacon Oil Co.	Hanford	17,300	Closed	Closed
Chevron USA, Inc.	Bakersfield	Closed	Closed	Closed
	El Segundo (2,3)	390,000 *	390,000	330,000
		15,000 *	15,000 *	
	Richmond (2,3)	270,000	270,000	270,000
		71,000 *	80,000 *	
Conoco, Inc.	Santa Maria (2)	9,500	9,500	9,500
Edgington Oil	Long Beach (2)	41,600	41,600	41,600
Exxon Co.	Benicia (2,3)	120,500	126,000	128,000
Fletcher Oil and Refining Co.	Carson (2)	29,500	29,500	29,500
Gibson Oil & Refining	Bakersfield	9,600	9,600 *	0
Golden West Refining Co.	Santa Fe Springs (2,3)	40,600	42,000	42,000
Huntway Refining Co.	Benicia (2)	7,000	8,600	8,600
	Wilmington (2)	5,500	5,500	5,500
Kern Oil & Refining, Inc.	Bakersfield	21,400	21,400	21,400
Lunday Thagard Co.	South Gate	8,100	8,100	8,100
MacMillan Petroleum Co.	Signal Hill (2)	14,000	14,000	14,200
Mobil Oil Corp.	Torrance (2,3)	123,000	123,000	123,000
Newhall Refining	Newhall	23,000	22,500	13,000
Oxnard Refining	Oxnard (2)	4,000	4,000	4,000
Pacific Refining Co.	Hercules (2)	55,000	55,000	55,000
Paramount Petroleum Co.	Paramount	32,000	46,500	46,500
		14,500 *		
Powerine Oil Co.	Santa Fe Springs (2)	33,400 *	35,000	35,000
Sabre Refining, Inc.	Bakersfield	10,000 *	Closed	Closed
San Joaquin Refining Co., Inc.	Bakersfield	10,000	14,300	14,300
		14,300 *	10,000 *	
Shell Oil Co.	Martinez (2)	135,200	140,100	140,100
	Wilmington (2)	102,000	112,000	125,000
Sunland Refining Co.	Bakersfield	12,000	12,000	12,000
Texaco Refining and Marketing, Inc.	Bakersfield	38,000	41,000	47,000
	Wilmington (2,3)	75,000	57,000	57,000
Tosco Corp.	Martinez (2,3)	126,000	126,000	126,000
Union Pacific Resources Co.	Wilmington (2)	64,000	65,000	65,000
Unocal Corp.	Wilmington (2,3)	108,000	108,000	108,000
	Rodeo (3)	70,000	77,000	71,900
	Santa Maria (2,3)	41,000	41,000	41,000
West Coast Oil Co.	Oildale	5,000 *	5,000 *	0
Western Oil Refining, Inc.	Long Beach	19,200 *	Closed	Closed
	Subtotal	2,401,200	2,379,200	2,206,200
OREGON				
Chevron USA, Inc.	Portland (3)	0 **	0 **	0
	Subtotal	0	0	0
WASHINGTON				
ARCO	Ferndale (2)	163,000	162,000	163,000
Chevron USA, Inc.	Seattle (2,3)	0 **	0 **	0
Mobil Oil Corp.	Ferndale (2)	77,000	77,000	77,400
Shell Oil Co.	Anacortes (2)	77,000	82,000	84,000
Sound Refining, Inc.	Tacoma (2)	11,900 *	11,900	0
Texaco Refining and Marketing, Inc.	Anacortes (2)	78,000	87,000	97,000
U.S. Oil and Refining Co.	Tacoma (2)	32,000	32,000	32,000
	Subtotal	438,900	451,900	453,400
Pacific Total Crude Capacity		2,840,100	2,831,100	2,659,600
National Total Crude Capacity		15,565,513	15,915,418	15654874
Total Number of Operable Pacific Refineries		45	41	40
Total Number of Operable National Refineries		219	213	204

(1) bpcd - barrels per calendar day.
(2) Refineries located in the coastal zone.
(3) Refineries processing California offshore oil.
(*) Currently idle, but was active during review period.
(**) Currently only conducting downstream operations.
Source: Adapted from U.S Department of Energy, 1987, 1988, 1989.

1981, while the number of operable crude oil distillation units has dropped 37 percent during the same time period. Figures 10 and 11 on the next page show the annual production through December 31, 1988, from State and Federal leases offshore California for gas and oil, respectively. Much of this crude is shipped to gulf coast refineries, which are better equipped to process it.

Appendix D (p. 97) lists for each Federal and State offshore project what platform produces which field and the postproduction destination of the crude and natural gas produced from those fields.

Table 19. *Number and capacity of operable crude oil distillation units at petroleum refineries in the United States as of January 1, 1989*

Year	Number	Capacity (Mbpcd)
1981	324	18,621
1982	301	17,890
1983	258	16,859
1984	247	16,137
1985	223	15,659
1986	216	15,459
1987	219	15,566
1988	213	15,915
1989	204	15,655

Mbpcd = thousand barrels per calendar day

* Beginning in 1987, the Hawaiian Independent Refinery (66 Mbpc distillation capacity) is included in U.S. totals.

SOURCE: Energy Information Administration, From EIA-820, Annual Refinery Report.

State Offshore Resource Assessment Programs

Historically, the major interest in State offshore energy resources on the west coast has been in California. Recently, the States of Washington and Oregon have begun to examine their potential resources. All three of those States that adjoin the Pacific OCS Region have embarked on resource assessment studies focused on those resources within offshore waters under their respective jurisdictions. Each of these studies is discussed in general terms in the sections that follow.

California Comprehensive Offshore Resources Study

In May 1987, the California State Lands Commission (SLC) denied a permit request from ARCO that would have allowed development of ARCO's Coal Oil Point project. If approved, the Coal Oil Point project would have been the first oil and gas development project in State waters to be approved since the 1969 oil blowout that occurred on Unocal's OCS Platform A in the Santa Barbara Channel. In issuing their denial of ARCO's request, the SLC indicated that they felt that a study of the combined effects of State and Federal offshore oil and gas development projects should be conducted prior to approving any new State projects.

The SLC requested this study to develop a database of regional and statewide information on the California coastal environment and the State's energy needs and resources. Though the emphasis of this study is on oil and gas, it will also examine other offshore resources and uses. The SLC intends to use the results of the California Comprehensive Offshore Resource Study (CCORS) to help them determine if individual offshore projects are in the best interest of the State.

Thirteen public meetings were held throughout California to gather information for the CCORS during the summer of 1988. After these meetings, the SLC prepared a comprehensive study guide that provides the structure for the CCORS. The SLC currently projects that it will release a public draft CCORS report by March 1990. The release of the draft will be followed by additional public meetings in April and May 1990. A final draft of the CCORS study is expected to be released by July 1990.

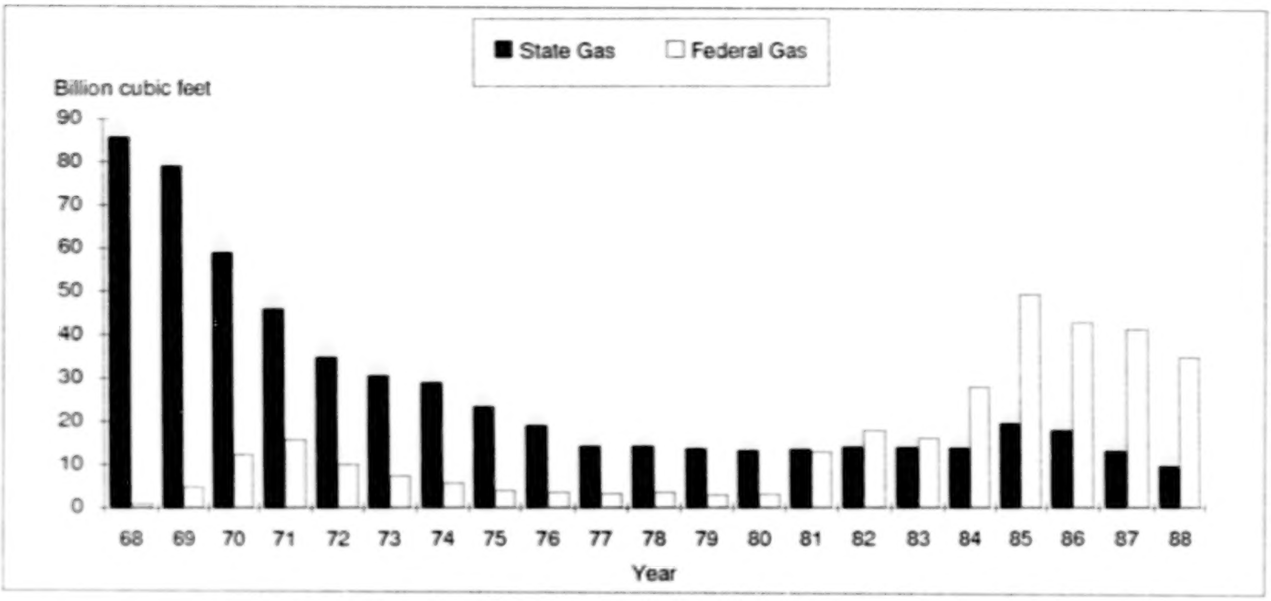

Figure 10. *Annual gas production from State and Federal leases offshore California through December 31, 1988.*

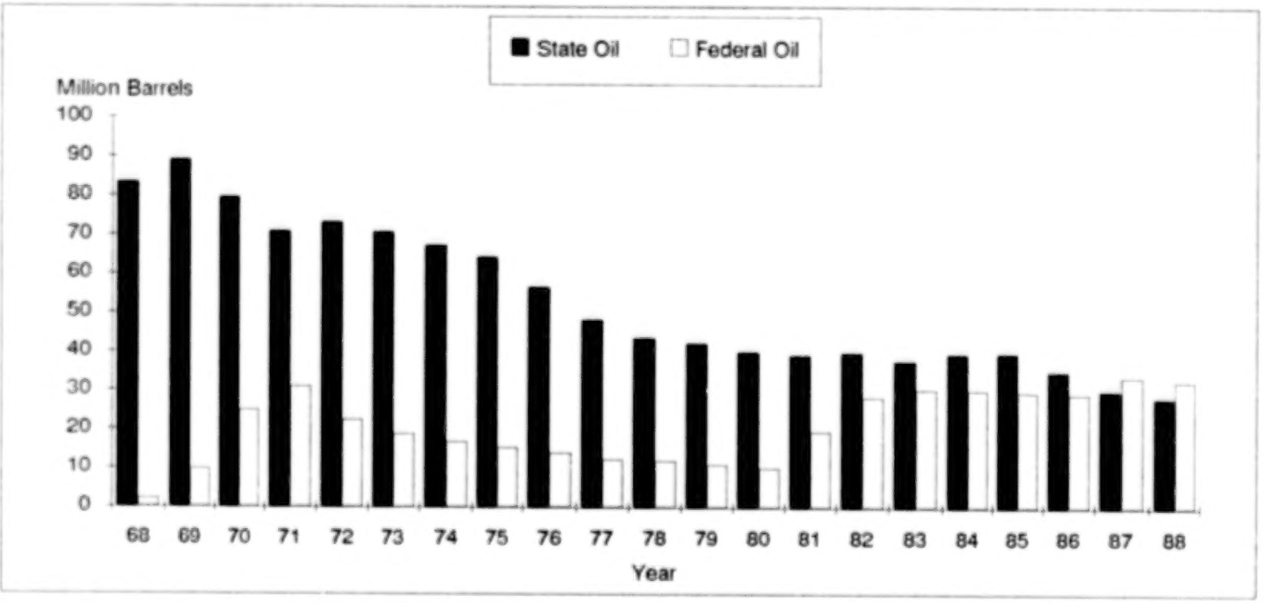

Figure 11. *Annual oil production from State and Federal leases offshore California through December 31, 1988.*

The SLC staff periodically issues a CCORS newsletter. To request this newsletter or for further information on the study guide or public meetings, contact the following office:

Project Manager, CCORS Staff
California State Lands Commission
1807 13th St.
Sacramento, CA 95814
(916) 322-0354

Oregon Ocean Resources Management Program

The growing interest in both energy and nonenergy minerals in the OCS and within waters under the jurisdiction of the State of Oregon has provided the impetus for the State to begin examining these resources and its overall ocean resources management structure. During its 1987 regular session, the Oregon Legislative Assembly enacted Senate Bill 630. Senate Bill 630 requires completion of an Ocean Resources Management Plan (ORMP) by August 1990 and a Territorial Sea Management Plan by July 1991. This bill also established the Oregon Ocean Resources Management Task Force to assist in preparing the ORMP.

The task force completed preparation of an interim report to the legislature in July 1988. (For additional information, see "Additional Reading" section at the end of this chapter.) The interim report contains the following:

- the need for a State ocean management program,
- a summary of the State's present abilities to manage oil, gas, and mineral development, and
- a work program outline and cost estimates for completing the ORMP. The task force will be conducting public workshops to solicit input to development of the ORMP.

For further information on the ORMP or to obtain copies of the interim report, contact the following office:

Oregon Ocean Resources Management Program
Department of Land Conservation & Development
320 SW. Stark St., Room 530
Portland, OR 97204
(503) 229-6068

Washington Ocean Resources Assessment Program

The proposed Washington-Oregon OCS Lease Sale 132 has prompted the State of Washington to begin to examine its policies on offshore oil and gas and other marine and coastal resources. In 1986, the Washington State Legislature enacted a statute and appropriated funds for the Washington Sea Grant to conduct the Ocean Resources Assessment Program (ORAP). The ORAP is designed to synthesize existing related information and report to the 1989 Legislature on information gaps and research needs and to present a plan for future studies.

The ORAP is composed of the following seven projects, each of which will result in its own specialized reports or publications:

- a statutorily mandated Advisory Committee to advise Sea Grant;
- an examination of the hydrocarbon potential of the OCS adjacent to Washington;
- publication of a regional oceanography text covering many of the subjects identified in the originating legislation;
- a workshop focused on the conceptual framework for future OCS research;
- an examination of the roles and mechanisms of State Governments in making OCS decisions;
- a synthesis report on existing information, information gaps, and research needs; and
- a studies plan designed by Sea Grant.

Anyone desiring further information on the ORAP or on its products should contact the following office:

Ocean Resources Assessment Program
Washington Sea Grant Program
University of Washington
3716 Brooklyn Ave., NE.
Seattle, WA 98105-6795

Exploration in State Waters

No exploratory drilling took place from platforms located in the State waters adjoining the Pacific OCS Region during the period of this report. Two operators had submitted applications for exploration projects for State offshore leases during the period of the last *Pacific Summary/Index* report; Phillips on lease 2955 and ARCO on leases 2726 and 2793. Both of these applications were withdrawn by the operators prior to preparation of the required environmental impact reports (EIR's). There were, however, several related activities in the State waters of California during the period of this report.

In July 1988, the SLC released the draft EIR prepared for proposed exploration activities on State oil and gas leases PRC 3489 and 3490. These leases are located offshore Ventura County between Port Hueneme and Point Dume. Mobil Exploration & Producing U.S., Inc. had proposed to drill five exploratory wells on the two leases that it co-owned with Union Oil Company of California. On August 11, 1988, Mobil withdrew its application for this proposed project. It is currently anticipated that Mobil will wait for the conclusion of the State's Comprehensive Offshore Resource Study before deciding whether to pursue this project.

Bush Oil Company proposed to drill two wells on State Lease PRC 1466 from Rincon Island to determine whether additional resources are available for production. If the planned wells are successful, Bush Oil proposed to connect production to existing, underused facilities at Rincon Island. The Bush Oil application to drill these wells was approved by the SLC. Bush Oil is in the process of filing an application for a coastal development permit. The CCC will probably render a decision in early 1990.

Development and Production in State Waters

Development drilling in California State waters, including both new wells and redrills, decreased 92 percent in the period 1985-88, according to data published by the California Department of Conservation. Many of the wells that are drilled are redrills because of the limited number of slots available on State offshore oil platforms and islands.

During the period 1982-88, production of oil and condensate from California State offshore leases has declined approximately 25 percent (see table 3, p. 13). Production of natural gas from these same leases has declined 8 percent overall during this same period, but 32 percent from its recent peak in 1985. State offshore production, in general, has been declining since 1969 (see fig. 10, p. 44).

California State offshore production was essentially equal to Federal production off of California in 1987. By the end of 1988, California State production was about 4.5 MMbbl less than Federal production in the same area. California State production of natural gas for 1988 was about 25 percent of that of Federal gas production off of California.

Additional Readings

California Department of Conservation, Division of Oil and Gas. 1988. *Seventy-third annual report of the State oil and gas supervisor.* Publication No. PR06. Available free of charge from the California Division of Oil & Gas, 1416 Ninth St., Room 1310, Sacramento, CA 95814, telephone (916) 445-9686.

Minerals Management Service. 1987. *Draft environmental impact statement—California proposed offshore oil and gas Lease Sale 91*: Report No. OCS EIS/EA, MMS 87-0032. Available from Public Affairs, Pacific OCS Regional Office, Minerals Management Service, 1340 West 6th St., Los Angeles, CA 90017, telephone (213) 894-2062.

Office of Technology Assessment. 1988. *An analysis of "Buy America" proposals for offshore drilling rigs and production facilities.* Available from the Oceans and Environment Program, Office of Technology Assessment, U.S. Congress, Washington, DC 20510-8025.

Oregon Ocean Resources Management Task Force. 1988. *Interim report to the Joint Legislative Committee on Land Use—managing Oregon's ocean resources.* Available from the Oregon Ocean Resources Management Program, Department of Land Conservation and Development, 320 SW Stark St., Room 530, Portland, OR 97204, telephone (503) 229-6068.

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3. Project-Specific Developments and Status

This chapter focuses on those offshore development and production projects that have had recent activity. Information is also provided in this chapter on the onshore pipeline network that is developing in southern California to transport hydrocarbons produced offshore California. Information is available on the various Federal and State offshore exploration projects in Chapter 2 (p. 17) and in Appendix B (p. 83.) to this report.

Federal Waters

Oil and gas activity in Federal waters has continued its shift to a development phase, and production of oil and gas has accordingly increased. Those Federal projects that are detailed below will more than double the production rate in the Pacific OCS Region within the next 3 to 4 years. The past 5 years has witnessed a substantial decline in the annual number of exploratory wells drilled on the OCS. The shift to a development phase is attributable to many interdependent and cumulative influences. These influences include the following:

- the substantial reduction in the price of oil and gas in this decade,
- the consequent reallocation of operators' exploratory budgets to that of development,
- readily available foreign supplies of crude oil,
- increased permitting obstacles encountered by Pacific offshore operators, and
- no new available acreage due to substantial local opposition to offshore leasing.

(For a project's earlier history, please refer to previous *Summary Reports* or the *OCS National Compendium*.)

Point Arguello Field Development Project

The Point Arguello field development project is an outgrowth of a discovery made by Chevron in this area during 1981. Chevron received approval of its development and production plans (DPP's) detailing proposed production using platforms Hermosa and Hidalgo in January 1985. Texaco also received approval of their DPP for Platform Harvest at that time. In the 4 years since these DPP's received final approval from the MMS, the operators have completed installation of the three platforms, the oil and gas processing facilities at Gaviota, and the Point Arguello Offshore System (PAOS) connecting the platforms to these facilities through a 24-inch oil line and a 20-inch gas line from Platform Hermosa. Oil will be dehydrated at the Gaviota facility; Chevron has requested permits to initially transport oil by tanker from Texaco's Gaviota Interim Marine Terminal to Chevron's and Texaco's refineries in the Los Angeles area. The natural gas will be processed at the Gaviota facility and then sold to Southern California Gas Company through a transmission line that crosses the facility's property. Liquid petroleum gas will be transported to markets outside Santa Barbara County by trucks until pipelines are built for this purpose; heavier gas liquids will be blended with crude oil.

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The oil and gas facility at Gaviota has been sized so that it may serve as a consolidated facility for other oil and gas development projects in the area. The processing facility as designed accommodates up to 250 Mbpd of crude oil emulsion and up to 120 MMcfd of natural gas. As currently constructed, the Gaviota facility can accept up to 125 Mbpd of oil emulsion and 60 MMcfd of raw gas. The county of Santa Barbara has adapted policies requiring offshore operators to use this facility (see discussion on the Molino Field Development Project, p. 58), or of the other designated consolidated facility being built by Exxon at Las Flores Canyon. Chevron and Texaco originally planned to begin production in December 1987 coincidental with the placement of the pipelines to shore.

December 1987—Desalinization unit comes on-line to provide fresh water for landscaping, domestic purposes, and other processes.

February 1988—Santa Barbara County learned that the hydrogen sulfide concentrations may be higher than earlier tests had indicated. Questions arise as to whether the final development plan (FDP), as approved, would cover the increased hydrogen sulfide concentrations according to the California Environmental Quality Act (CEQA) and whether the mitigation measures required by the FDP are adequate to ensure that potential impacts will not be greater than those projected in the analysis used during the permitting process.

March 1988—Santa Barbara County Resource Management Department approved a "gas buy-back program" proposed by Chevron, whereby Chevron would transport processed, odorized gas purchased from Southern California Gas Company from the Gaviota facility back to the platforms to operate equipment. This natural gas "buy-back program" would not only replace diesel equipment and consequently lower air emissions from the platform but would also serve to test the integrity of the pipeline. The Hollister Ranch Owner's Association and the Bixby Ranch filed an appeal to the Resource Management Department's substantial conformity determination. The County Planning Commission subsequently denied the appeal.

April 1988—Santa Barbara County circulated a Notice of Preparation describing the scope of a supplemental environmental impact report (SEIR) on the impact of higher levels of hydrogen sulfide in the sour gas pipeline with the purpose of reviewing data prior to addressing Chevron's request for a determination of substantial conformity.

August 5, 1988—The SEIR is published assessing the potential safety and environmental consequences related to the production, transportation, and processing of natural gas containing higher concentrations of hydrogen sulfide than previously analyzed.

December 20, 1988—the Planning Commission voted 5 to 0 to deny Chevron's request for a determination of substantial conformity regarding higher levels of hydrogen sulfide. The Planning Commission took no action to certify the SEIR as adequate under CEQA.

January 1989—Chevron appeals the Planning Commission denial of their request for a determination of substantial conformity and on January 24th proposed a substantial conformity mitigation package to the County Board of Supervisors. The package included Chevron's most recent mitigation commitments and an operating plan designed to maintain the dimensions of the toxic hazard footprints as identified in the worst case analysis of the original project EIR.

January 30; February 6, 27; and March 20, 1989—Hearings are held regarding Chevron's proposed mitigation package and operating plan. Santa Barbara County requested additional specificity and enforcement provisions. County staff was directed to (1) incorporate elements of the mitigation package into the permit, (2) prepare an enforcement agreement, and (3) develop draft findings in support of substantial conformity.

April 4, 1989—Board of Supervisors voted 4 to 1 to approve Chevron's substantial conformity appeal, thereby reversing the Planning Commission's decision. In its approval, the Board also executed an agreement with Chevron, the MMS, and Santa Barbara County, which ensures the enforcement of Chevron's pipeline operating plan. The Board then certified the SEIR.

April 18, 1989—Hollister Ranch Owners' Association appealed the County's action to the California Coastal Commission (CCC) regarding the County Board of Supervisor's substantial conformity determination of the increased hydrogen sulfide gas being transported to the Gaviota gas processing facility.

May 2, 1989—Chevron's request to Santa Barbara County to deem them in compliance with Condition Q-6 of the FDP concerning initially transporting crude oil by tanker was approved on an interim basis and will be reviewed October 1, 1989. Condition Q-6 states Chevron will transport crude oil out of the county by pipeline but allows transportation by tanker as long as there is no pipeline available to the shipper's preferred refinery destination.

June 12, 1989—The CCC denied the appeal by the Hollister Ranch Owners' Association on a 6 to 4 vote on the grounds that there was no substantial issue for the appeal.

August 8, 1989—The CCC denied Chevron's permit by a 7 to 2 vote on the basis of condition Q-6, which stated that Chevron would initially transport crude oil out of the county by tanker. Production from platforms Hidalgo, Hermosa, and Harvest was scheduled to begin at the end of August at a rate of 125 Mbpd of crude and 60 MMcfd of gas. The CCC maintained that Chevron did not adequately assess the effects of tankers on the environment. Chevron had planned to have a boom around the tankers, which are one-fourth the size of the *Exxon Valdez*, every time a load of crude was picked up at Gaviota. Chevron is now studying several options, including litigation. The CCC wants Chevron to repermit the project using pipelines rather than tankers for transportation. Chevron estimates the project's partners are losing $500,000 per day in interest on their investment.

October 6, 1989—Chevron files suit in Santa Barbara County Superior Court challenging a decision by the CCC that overruled a permit granted by the county allowing temporary tanker transportation from Chevron's marine terminal at Gaviota to its El Segundo refinery in Los Angeles.

The Gaviota Interim Marine Terminal (GIMT) as originally approved consisted of (1) total onshore oil storage tank capacity of 753 Mbbl, including existing capacity of 275 Mbbl, addition of two new 239-Mbbl tanks and, if needed later, an addition of one new 80-Mbbl tank; (2) a relocated 6-point offshore mooring situated 3,500 feet offshore in water about 60 feet deep at mean tide; and (3) a dedicated fleet of tankers averaging 40,000 dwt, specially modified to work with the vapor recovery system at the terminal, that will transport the crude oil generally to Los Angeles area refineries. Initial capacity of the terminal is expected to be about 43 Mbpd with expansion up to 100 Mbpd, if needed. The Gaviota Terminal Company (GTC) received final approval for its proposed expansion of the existing Gaviota marine terminal in June 1987.

Various offshore companies with oil and gas interests in the region proposed using this site for the south coast consolidated marine terminal. These companies later requested that the expanded Gaviota terminal be allowed to be used on an interim basis until the proposed consolidated marine terminal is built offshore Las Flores Canyon.

July 9, 1987—Santa Barbara County issued a Coastal Development Permit and Building Permit to GTC, and construction began on July 10th.

August 25, 1987—The CCC concurred with consistency certification and granted a coastal permit with conditions for the portion of the project in State waters.

July 1988—The tanker *Chevron Oregon* berthed at the facility in order to conduct a 1-day mooring trial. The trial tested the new mooring system and pipeline end manifold hookups. No crude oil was transported during the trial. A second mooring test would be conducted with Texaco's tanker *Florida* in October 1988.

August 31, 1988—Texaco advised Santa Barbara County of its intention to file for a revised FDP in order to designate the GIMT as the permanent consolidated marine terminal for the south coast of the county.

December 9, 1988—Texaco files a revised FDP with Santa Barbara County to establish the GIMT as the permanent south coast consolidated marine terminal. Under Condition R-1 of GTC's current permit, the marine terminal portion of the facility will cease operation if the county determines that pipelines to both the Texas gulf coast and Los Angeles are operational, or if a new consolidated marine terminal is operational. If the above condition is not met by July 1, 1990, Santa Barbara County will re-evaluate the adequacy of the current permit conditions as they apply to continued operation of the facility. Concurrent with GTC's request, Exxon requested the county to amend the Santa Ynez Unit FDP in order to defer construction of the Las Flores Canyon marine terminal for up to 5 years while the GTC project permitting process is completed. (See the Santa Ynez Unit Development Project in the next column for further discussion.) The GTC would increase the throughput limits from 100 Mbpd to 125 Mbpd and the maximum tanker trips from 137 trips per year to 168 trips per year. County staff determined that the initial application submittal was incomplete and asked for additional information.

January 1989—GTC completed construction of the marine terminal. However, many plans and programs, such as the approval of the Emergency Response Plan and Tanker Mooring Manual, must be completed and/or finalized.

April 1989—A Joint Review Panel was formed to review the GTC application for the GIMT to be a permanent facility. The panel consists of representatives of Santa Barbara County, the State Lands Commission (SLC), the CCC, and the U.S. Army Corps of Engineers (ACOE).

May 18, 23, 1989—The Planning Commission considered the recently released Marine Emergency Management Study (MEMS) at hearings and proposed the implementation plan for those recommendations. (See discussion on MEMS on p. 73.) The commission was concerned that the existing permit conditions were inadequate to effectively mitigate expected impacts. The commission requested that the Board of Supervisors consider reopening GTC's permit and conduct a comprehensive review.

Santa Ynez Unit Development Project

The Santa Ynez Unit (SYU) is composed of 20 OCS leases that encompass approximately 97,437 acres. This unit adjoins the Federal-State offshore boundary and lies between Point Conception and Naples. The majority of the leases in the SYU were acquired during OCS Lease Sale P4, held in 1968; two leases were acquired in Sale 48 in 1979, and another was obtained in Sale 68, which was held in 1982. The original discovery well in the SYU was made during 1968. Subsequent exploration and delineation drilling have revealed the presence of four fields: Hondo, Secate, Pescado, and Government Point fields. The original unit agreement was approved in 1970, but it has been amended since then. Most recently, the SYU was expanded to include lease OCS P-0180 in July 1987.

The original DPP for the SYU was approved in 1974. Exxon subsequently installed Platform Hondo on lease OCS P-0188, in June 1976, and began production in April 1981. In December 1982, Exxon submitted a revised DPP for approval. The revised DPP proposed installing either three or four new platforms to develop the remaining fields that Exxon had discovered in the SYU. After a partial denial from the CCC in June 1983, Exxon modified its proposal and received concurrence by the CCC for a portion of the revised DPP in August 1985. The MMS granted approval of "Option B" of the revised DPP in September 1985.

Negotiations with Santa Barbara County for their approval of the onshore components of the SYU development project snagged primarily on the issue of the potential degradation of onshore air quality by offshore air pollutant emissions. After protracted negotiations, Exxon and Santa Barbara County reached agreement in June 1987 on methods to mitigate possible air quality degradation. In September 1987, Exxon submitted another revised DPP for approval by the MMS.

The revised DPP calls for the installation of up to three platforms to develop the SYU. Platforms Harmony and Heritage will begin to be installed during 1989; Platform Heather will be installed only if a review of the impacts of the project to be conducted in 1994 is favorable. Platform Harmony will help Exxon further develop the Hondo field. After initial startup in 1992, it is anticipated that production of oil and condensate through Platform Harmony will peak at 35-40 Mbpd in the period 1993-98. Between startup and the year 2007, natural gas produced in excess of 30 MMcfd will be reinjected; after the year 2007, up to 60 MMcfd may be produced through Platform Harmony.

Platform Heritage, which will be used to produce the Pescado field, is also projected to startup in 1992 and peak at 35-40 Mbpd between 1993-98. Natural gas produced from this platform will be reinjected until the year 2009. After 2009, production of natural gas from Platform Heritage is expected to peak at 55 MMcfd.

The eventual installation of Platform Heather, proposed to develop the Secate field, will be further evaluated in 1994, according to permit conditions imposed by Santa Barbara County. If it is built and installed, production is expected to peak at 10-15 Mbpd of oil and condensate and 20-30 MMcfd of natural gas.

Following the installation of Platforms Harmony and Heritage and successful startup of the onshore processing facilities, Exxon will remove the offshore storage and treating vessel (OS&T) currently used to process oil produced by Platform Hondo. Oil from all platforms will be dehydrated at the Las Flores Canyon facility and then transported out of Santa Barbara County, probably to Texas, through the All American Pipeline. Design capacity of the oil facility is 140 Mbpd with an annual average of 125 Mbpd. Current plans call for production of approximately 100 Mbpd, after startup in 1992, until and unless Platform Heather begins to produce. Crude oil storage tanks at the facility will have a capacity of 504 Mbbl.

Gas treatment at the Las Flores Canyon facility is permitted to 21 MMcfd; gas treatment at the Pacific Offshore Pipeline Company (POPCO) facility is permitted up to 60 MMcfd. Much of the natural gas produced by the SYU will be sold by POPCO into existing sales gas lines. Some of the gas will, however, be diverted to fuel the 49-megawatt cogeneration facility that is being built in Las Flores Canyon to power the SYU development project facilities and offshore platforms.

September 15, 1987—After four public hearings, the Planning Commission approved Exxon's FDP and imposed 168 conditions (not including air permits) on the project to mitigate expected environmental impacts.

January 1988—Santa Barbara County approved a Coastal Development Permit for removal of the El Capitan marine terminal facilities adjacent to Highway 101. Exxon will empty, clean, and dismantle the 2,000-barrel and 80,000-barrel tanks, as well as flush and cap the flow lines into the tanks. The SLC granted Exxon a 30-year lease for a single anchor leg mooring (SALM) offshore its onshore facilities at Las Flores Canyon. This site will serve as the county-approved consolidated marine terminal along Santa Barbara County's south coast. This terminal would be used, if needed, to transport crude oil out of the county. The operators of the Gaviota marine terminal are, however, currently petitioning Santa Barbara County to redesignate their already constructed facility as the south coast consolidated terminal.

March 1988—Exxon receives approval of permits allowing them to begin grading and other work in Las Flores Canyon preparatory to construction of the oil-and-gas facilities to be located there.

April 1988—Following review and concurrence by the CCC in February 1988, the MMS approved this revised DPP on April 8, 1988. Exxon broke ground for its approved onshore facilities in Las Flores Canyon on April 8, 1988. As a condition of its SLC and county permits, Exxon has also begun to dismantle its older oil storage and handling facility at the El Capitan marine terminal. From April to October 1988, construction efforts centered on grading, drainage and erosion control, revegetation of slopes, and special preparation for catch basins for the upcoming rainy season at Las Flores Canyon.

November 1988—Exxon submitted an application to revise the SYU Project FDP to defer construction of the marine terminal for a period of 1-5 years. Exxon's proposal to defer construction of the offshore SALM is related to recent Gaviota Terminal Company inquiries about developing the GIMT into a permanent facility. Part of Santa Barbara County's approval of the Santa Ynez unit FDP was based on a carefully coordinated construction schedule that was developed to help minimize air quality and marine biological impacts. The county evaluated the potential for increased environmental impacts that could result from a major change in the approved construction schedule.

May-July 1989—Grading for the project is about 75 percent complete. Preparations began for installation of new pipelines associated with the Las Flores Canyon facility.

June 21, 1989—The jacket for Platform Harmony is launched using the offshore barge crane, *Balder*. Installation is expected to take about 2 months, with construction of the deck to begin shortly thereafter.

July 1989—An EIR/EIS addendum was released for Exxon's request to defer construction of its approved marine terminal project. If alternative facilities to accommodate Exxon's needs are approved in the future, Exxon will relinquish its approved permit for their Las Flores Canyon marine terminal. Exxon and Pacific Offshore Pipeline Company (POPCO) began work on a comprehensive water management plan for Los Flores Canyon that will address the long-term water needs of both facilities.

October 8, 1989—The jacket for Platform Heritage was launched in 1,090 feet of water.

November 1989—Installation of the nearshore pipelines (20-mile emulsion, 12-inch treated water, 3 power cable conduits) began at El Capitan State Beach.

San Miguel Field Development Project

Lease OCS-P 0409 was acquired by joint bid during OCS Lease Sale 53 held in May 1981. A series of six exploratory wells were drilled on this lease between 1982 and 1984. The first discovery on this lease was identified during 1983. Cities Service, at that time the designated operator, filed their initial DPP with the MMS in April 1985. In September 1985, the CCC denied concurrence of the coastal zone management consistency certification developed by the operator for that portion of the project in Federal waters. The operator addressed the concerns of the CCC in the San Miguel field DPP twice, once in November 1986 by modifying it to include supplemental information and again in January 1987, to incorporate an emissions mitigation plan and report. Subsequent to these modifications the CCC granted approval of the DPP in January 1987, and the MMS then approved the DPP in April 1987. Following these approvals, Santa Barbara and Ventura Counties filed suit against the CCC and the MMS over those agencies' approvals of this project. In July 1987, Shell Western Exploration & Production, Inc. (SWEPI) acquired Cities Service's interest in lease OCS-P 0409 and became the new designated operator.

As approved, the DPP called for the installation of the 70-slot Platform Julius on lease OCS-P 0409, approximately 9.5 miles west of Point Sal in waters 478 feet deep. Production is to be subject to initial separation on the platform, with gas either being reinjected into the producing formation or used to power platform engines and with oil and produced water being transported to shore by separate pipelines for further treatment. A third pipeline is proposed to deliver service fuel from shore to the platform. Peak production of crude oil from Platform Julius is projected to be 40 Mbpd. After treatment, produced oil is to be transported via a pipeline known as the Celeron Interconnect Pipeline to a connection with the main All American Pipeline at Sisquoc. From there the produced crude oil would be transported to Texas for refining.

The EIR/EIS for this DPP identified the four alternative sites for the onshore treatment facility with three of the sites in San Luis Obispo County near Nipomo Mesa and an alternative site in Santa Barbara County at Douglas. The preferred alternative is a site adjacent to Unocal's Santa Maria refinery. As approved by the CCC and the MMS, the DPP calls for extensive mitigation of air pollutants, both on the platform and on the ships that will service the platform from Port Hueneme. This mitigation program was proposed as a less costly alternative to full electrification of the platform from sources onshore.

In January 1987, the CCC concurred with the consistency certification for the offshore components of the San Miguel project. In March, the county brought suit against the CCC regarding their concurrence. A second Joint Review Panel was constituted to manage development of the EIR/EIS for the San Miguel field DPP that required the operator to develop additional environmental analyses to examine the proposed emissions mitigation program. This analysis was released in April 1987. Subsequent to the release of the analysis, the MMS released an environmental assessment of the proposed mitigation program concluding that onshore air quality would be adequately protected.

After approval of the Federal portions of the San Miguel field project, the operator began the process to gain approval of those portions of the project under State jurisdiction (i.e., pipelines and onshore facilities). At this time, the local coastal management program of San Luis Obispo County had not been certified by the CCC; therefore, the operator could not apply to the county for its coastal development permit. The operator did apply to the county for approval of its FDP and for permits allowing construction of its onshore facilities.

Subsequent to SWEPI's application, the San Luis Obispo County's local coastal program was certified by the CCC and the county was given authority to administer coastal development permits. In effect, this certification requires SWEPI to reapply to the county for reconsideration of its San Miguel field project.

September-October 1987—Public hearings on the onshore portions of the San Miguel field project were held.

December 1987—SWEPI submits an alternative air quality mitigation program to the San Luis Obispo County Board. The proposal contained four new elements:

- a contribution of $500,000 toward the funding of an Air Mitigation Program,
- funding in the amount of up to $150,000 for the Air Quality Management update,
- a contribution of $50,000 for a grid feasibility study, and
- an offer to augment SWEPI's funding commitment for air monitoring stations.

In exchange for these commitments, SWEPI asked San Luis Obispo County to delete the air quality conditions related to operations of facilities on the OCS, including partial grid power with a turbine waste heat recovery system and an emission mitigation plan and report.

January 26, 1988—The San Luis Obispo County Board of Supervisors approved, with conditions, the San Miguel project FDP and permit application. However, the county's approval was required to be subjected to voter approval because of a previously enacted local oil initiative (see related discussion in ch. 4, p. 70).

June 7, 1988—Three measures were developed for a June 1988 ballot. These measures were rejected by San Luis Obispo County voters on June 7, 1988, by a vote of about 55 percent to 45 percent. Measure A focused on SWEPI's plans to build a dewatering plant on the Nipomo Mesa site; Measure B focused on Celeron's planned Interconnect Pipeline and a required pumping station; and Measure C would have allowed a lot line adjustment to create a 45-acre parcel for both SWEPI's plant and the Celeron pumping station.

August 1989—SWEPI's 70-slot Platform Julius is ready at Hyundai's Ulsan, South Korea shipyard. However, no installation date has been set.

September 1989—SWEPI approaches Santa Barbara County about the possibility of locating San Miguel's onshore components in the North County area. SWEPI will probably await the outcome of litigation against the San Luis Obispo County's voter initiative before deciding on negotiating another site for these onshore facilities. The litigation is currently in the U.S. Court of Appeals. The company has withdrawn all its local applications pending the results of the litigation.

November 1989—SWEPI obtains SOP to June 30, 1994, for all units it owns in northern Santa Maria Basin and for lease OCS-P 0409.

Point Pedernales Unit Development Project

The Point Pedernales Unit is composed of portions of six OCS leases that lay offshore southern California near Point Arguello and Point Pedernales. Unocal is the designated operator for the Point Pedernales Unit even though Exxon, Chevron, and ARCO have substantially greater legal interest in the leases.

Two DPP's were approved by the MMS in August 1985 for separate leases in the Point Pedernales field, both leases of which are now contained within this unit. Unocal has approval for its DPP covering production from Platform Irene on lease OCS-P 0441. Exxon received approval for its DPP, which proposed producing from lease OCS-P 0440 using proposed Platform Independence (since renamed Iris). Subsequent to approval of these DPP's, the unit was formed and Exxon relinquished managerial control of the proposed Platform Independence project to Unocal. Unocal subsequently changed the name from Independence to Iris. Unocal began producing from this unit through Platform Irene, which is set on lease OCS-P 0441, in April 1987. Production from Platform Irene is trans-ported ashore in pipelines. Crude oil is directed to a new 36-Mbpd processing facility at Lompoc and then onto Unocal's upgrader near Nipomo in San Luis Obispo County, then through an existing Unocal pipeline to its Rodeo refinery at San Francisco. Natural gas is sent to Unocal's Battles Gas Plant near Santa Maria and, after processing, is sold into an existing local distribution pipeline. The Battles plant is limited by permit to a 13-MMcfd capacity for offshore production. If additional capacity is required by Unocal, it will have to reconstruct or move the plant. In August 1989, Unocal indefinitely postponed its pile, 30-slot Platform Iris that was to be set in the Point Pedernales field in 1990. Unocal also canceled two related pipeline projects.

Santa Clara Unit Development Project

The Santa Clara Unit is composed of eight OCS leases. The unit was formed in March 1973 with Chevron as designated operator. Exxon, Unocal, and ARCO also hold substantial interests in the leases that compose the Santa Clara Unit. Unocal is the designated operator for one lease in this unit, lease OCS-P 0216.

The first discovery well in the Santa Clara Unit was made on November 22, 1970, on lease OCS-P 0205, resulting in the discovery of the Sockeye field. Chevron filed a DPP with MMS on January 24, 1986. Five days later, the MMS sent the Platform Gail DPP to the CCC for their consistency review. The CCC held a hearing June 10, 1986. The MMS completed an environmental analysis, which resulted in a Finding of No Significant Impact (FONSI) for the project. On July 8, 1986, the CCC denied consistency concurrence, against the recommendations of its staff, by a 6 to 6 vote.

The CCC was required to (1) adopt findings for the denial, (2) supply Chevron with the necessary steps required to mitigate their plan, and (3) apprise Chevron of their appeal rights to the Department of Commerce. Chevron filed a modified DPP with the CCC and the MMS on July 15, 1986, containing additional mitigation measures. The jacket for Platform Gail arrived from Japan in late August 1986, but it had to be towed in circles for 2 1/2 weeks pending consistency concurrence of the CCC. The CCC again denied consistency on September 9, 1986, by an 8 to 4 vote. Chevron filed a Notice of Appeal with the Secretary of Commerce on September 10, 1986. Chevron proceeded to transport the jacket to the Port of Long Beach for temporary storage. Chevron filed suit against the CCC on November 3, 1986, alleging that the CCC had failed to properly object to its plan within the time allowed by the Coastal Zone Management Act.

An agreement was reached out of court on November 12, 1986. Platform Gail was launched from its barge on April 5, 1987. The 760-foot, three-deck platform has 36 drilling slots with 25 wells being planned. Peak production is expected to reach 13,300 bpd and 20 MMcfd of natural gas. Top-side modules were constructed in Stockton, California. After some initial processing at the platform, the crude oil and gas will accompany that of Platform Grace to Chevron's processing facilities at Carpinteria. Treated oil will then be transported via pipeline to Chevron's El Segundo refinery in the Los Angeles area. Cleaned sales gas will be sold into the local gas distribution network.

Four of the other leases within this unit have also had discoveries drilled on them. Prior to August 1987, two platforms were installed within the Santa Clara Unit to develop the two separate oil and gas fields discovered. Chevron set Platform Grace on OCS-P 0217 in 1979 and Unocal set Platform Gilda on OCS-P 0216 in 1981.

August 26, 1987—The CCC effectively denied Chevron a discharge permit for Platform Gail based on a 4 to 4 vote. However, the State Water Quality Control Board endorsed the application and recommended that EPA ensure that the discharges created no environmental problems.

November 20, 1987—The CCC failed to adopt findings in a timely manner regarding their August 1987 denial of Chevron's discharge permit for Platform Gail. On November 21, 1987, EPA issued the permit because of CCC's failure to provide findings on their decision.

June 16, 1988—Chevron spudded the first well from Platform Gail.

August 12, 1988—Oil began flowing from Platform Gail during production testing. Well E-1 is expected to produce about 1,000 bpd and negligible amounts of gas. The crude oil will be transported to Carpinteria via Platform Grace and its attendant pipeline gathering system for initial processing and then to Chevron's El Segundo refinery in Los Angeles.

State Waters and Coastal Projects

With little new exploratory or development activity taking place in State waters, the decrease in State production shows no signs of abating. There is currently only one active exploratory/development project proposal within State waters—Rincon Island.

Since July 1987, four State water or coastal projects have been withdrawn or denied. Unocal's development of its Cojo Prospect using proposed Platform Hayley has recently been withdrawn. The other three projects—SWEPI's Hercules, ARCO's Coal Oil Point, and Occidental Petroleum's Pacific Palisades—are discussed below.

Hercules Development Project/ Molino Gas Field

SWEPI proposed further development of its State offshore Molino gas field on State Lease 2920. This field has been produced previously using subsea completions tied to SWEPI's gas plant at Canada de la Huerta. SWEPI's original proposal called for expansion of its gas processing plant at Canada de la Huerta to accommodate up to 30 Mbpd of oil and 100 MMcfd of gas produced from a new offshore platform proposed to be installed approximately 4 miles southeast of Gaviota in State waters.

An agency Joint Review Panel was formed to direct the preparation of the EIR/EIS. The SLC and Santa Barbara County are the CEQA co-leads. Other members of the Joint Review Panel are the Corps of Engineers, the CCC, and the State Office of Offshore Development. This panel is reviewing various project alternatives, among which is the processing of SWEPI's oil and gas at the Las Flores Canyon and Gaviota consolidated sites.

December 1987—The Joint Review Panel reviewed the administrative draft EIR/EIS. Additional air quality modeling is expected to delay release of the draft EIR/EIS to the public until mid-January 1988.

February 1988—Santa Barbara County's adoption of new south coast consolidation policies prompted SWEPI to develop new configurations that do not require expansion of their Molino gas plant, since facility expansion may not be consistent with these new policies. Release of the draft EIR/EIS is rescheduled for May 1988.

April 1988—As a result of the county's new south coast consolidation policies, SWEPI proposed a new project alternative that includes offshore dehydration of oil to 20 percent water content (as is done at Hermosa, Harvest, and Hidalgo) with ocean discharge of produced water, oil processing at Gaviota, sour gas stripping on the platform, and sweet gas processing at the existing Molino gas plant. SWEPI requested that this new alternative be fully evaluated in the project EIR/EIS. Release of the EIR/EIS is delayed until July 1988.

July 1988—The project EIR/EIS is completed. SWEPI requested additional time prior to its release to reconsider the economic feasibility of the project.

September 1988—SWEPI announced it no longer intends to develop the project as originally proposed but will instead seek permits for the environmentally preferred alternative identified in the draft EIR/EIS. Under the modified proposal SWEPI projected that oil would be dewatered at its Hercules platform prior to being transported by pipeline to Chevron's Gaviota facility—one of the two county approved consolidated facilities. Up to 75 MMcfd of natural gas would be scrubbed of hydrogen sulfide at Platform Hercules and then transported by pipeline to a modified version of SWEPI's Molino gas plant. SWEPI would have to file a Request for Exemption that would allow new gas production to be processed at the Molino gas plant.

April 4, 1989—SWEPI announced in a press release that the Hercules project is no longer feasible. The project is canceled and the Molino gas plant will shut down operations in May 1989. Disassembly of the plant will begin immediately afterwards, but will take several years to abandon the site permanently.

Coal Oil Point Development Project

In 1982, ARCO announced the discovery of one of several oil and gas fields underlying their State leases offshore Coal Oil Point. ARCO currently produces oil from State lease 3242 using Platform Holly and their Seep Containment System. Additionally, ARCO proposed developing State leases 208, 308, 309, 3120, and 3242 by installing three separate two-platform complexes: Haven A and B on 3120; Holly A and B on 3242; and Heron A and B on 309. On each lease, one platform would be for development and production while the other would process the resulting production. Subsequently, ARCO abandoned the two-platform configuration concept in favor of three single platforms and requested permission of the SLC to commingle the production from the three platforms prior to metering.

Under either configuration, ARCO's preferred development proposal would send produced sweet and sour gas through two new pipelines to a new gas processing facility to be built in Las Flores Canyon north of the existing POPCO facility; whereas, crude oil would be piped to ARCO's existing facility at Ellwood. ARCO proposed to remove all gas processing facilities at Ellwood and to expand the existing 20 Mbpd capacity to 80 Mbpd. After processing, the gas would be sold to SoCal and transported into existing lines at Las Flores Canyon for local consumption; whereas, the crude oil would be transported to refineries outside of Santa Barbara County by using either the consolidated marine terminal, a pipeline network to Los Angeles, if built, or the All American Pipeline to ARCO's refinery in Houston, Texas.

In May 1987, the SLC denied ARCO's permit for the offshore portion of its Coal Oil Point project. The SLC based its denial on concerns with (1) social and economic impacts from visual degradation of the Goleta - Coal Oil Point area, (2) potential impacts from oil spills, (3) loss of benthic habitat, (4) noise pollution, and (5) impacts on commercial fishing and mariculture.

Much of the controversy surrounding the Coal Oil Point project was focused on ARCO's proposed Platform Heron, the easternmost platform in the proposal. This platform would have been located offshore from the campus of the University of California at Santa Barbara and the community of Isla Vista. ARCO claimed that this platform and its location were critical to its proposal and indicated that moving the proposed location of this platform would make the project uneconomic.

July 1987—ARCO filed litigation against the SLC and Santa Barbara County, as a co-defendant in view of their public support of the SLC decision, seeking $796 million in damages. ARCO claimed that in denying its permit request the SLC had exceeded its authority and had violated terms of ARCO's offshore leases. Further, ARCO indicated that this denial breeched terms of prior agreements it had had with the State and county when ARCO agreed to install the Seep Containment Project to contain naturally occurring oil and gas seeps in the seabed in this offshore area.

September 30, 1987—ARCO filed suit against the SLC and Santa Barbara County in the Los Angeles Superior Court on grounds similar to those upon which it had based its earlier claim. This suit has not yet been adjudicated.

December 9, 1987—The County of Santa Barbara issued its final denial of ARCO's permit request for the onshore portion of this same project. The action applied to both the Ellwood and Las Flores Canyon processing alternatives. The county indicated that the onshore plants proposed by ARCO to handle production from the Coal Oil Point project would pose a threat to public safety; and furthermore, since the offshore production platforms of ARCO's project were denied by SLC it was unclear where production would come from for the proposed onshore facilities.

January 1988—ARCO submitted a production plan to Santa Barbara County for two production wells to be drilled from an onshore site at Dos Pueblos and processed at the existing Dos Pueblos facilities. This site is adjacent to the site proposed for oil storage tanks as part of the Coal Oil Point project. Santa Barbara County deemed the application incomplete.

November 22, 1989—Attorneys completed their arguments before the Los Angeles Superior Court. ARCO is seeking $840 million, contending that State and county agencies wrongfully blocked the development of oil and gas leases in State waters of the Santa Barbara Channel. That figure includes the estimated value of proven and potential oil and gas reserves at the site, as well as $55,000 per day, retroactive to May 27, 1987, when the ARCO permit was denied. No estimate was given on when a decision will be made.

Pacific Palisades Development Project

Occidental Petroleum proposed to drill 2 exploratory and 60 production oil and gas wells onshore on a 2-acre site in the Pacific Palisades, on the inland side of the Pacific Coast Highway adjacent to Santa Monica Bay. The volume of crude oil at the site was estimated to be between 25 and 60 MMbbl. The proposal also included installation of an offsite hydrauger/dewatering system to stabilize the adjacent landslide area.

In August 1966, Occidental Petroleum discovered oil in the Pacific Palisades from a single well drilled to a depth of 9,721 feet. The site of the core hole was near the Canyon Elementary School. In May 1970, Occidental acquired the 2-acre site from the City of Los Angeles. The opposition group, "No Oil, Inc.," was formed. In September 1972, the Los Angeles City Planning Commission approved Occidental's plans without requiring an EIR. By October 1972, the Los Angeles City Council and Mayor Yorty approved drilling ordinances for the project. The California Supreme Court nullified the drilling ordinances in December 1974 because no EIR was prepared. In June 1978, the City Planning Commission again approved the drilling plan, which now included an EIR.

During the period from June to August 1978, the City Council again approved the drilling ordinances. Mayor Bradley vetoed the ordinances and the City Council failed to override his veto. From December 1980 through November 1983, Occidental filed a new EIR, disputing opponents' claims that the site was too unstable to develop. In January 1985, the City Council again approved the drilling request and Mayor Bradley, in a major reversal, also approved the measure. A State court ruled in February 1986 that the EIR was inadequate. An appeals court decision later overturned this ruling.

In June 1987, the CCC recommended denial of the project because of the project's inconsistencies with the Coastal Act policies regarding impacts on recreation and scenic coastal public views, project alternatives, and effects on the Local Coastal Program. The CCC has traditionally reviewed oil and gas exploration projects separately from oil and gas production projects. In addition, the CCC indicated that any oil or gas produced would require pipelines for transportation. The CCC felt that it would be inconsistent with the Coastal Act to approve any production activities before an extensive analysis of pipeline routes, potential impacts, and mitigating measures were presented. Occidental modified their application to include only the exploration phase and the dewatering system.

In July 1987, the CCC issued a conditional permit for the exploratory phase, including the offsite dewatering system. The CCC deferred to consider the development stages of the project. Occidental acknowledged that the decision on the production phase of the project was now independent of the exploration phase, and that future approval of the development phase was not guaranteed. The dewatering system was later installed, but no exploration wells were drilled. No Oil, Inc., filed a law suit against the CCC as a result of the exploration well approval.

Events subsequent to July 31, 1987, are as follows:

September 1987—The CCC report was issued approving two exploration wells and the landslide dewatering system.

March 1988—Two opposing ballot initiatives are introduced to Los Angeles voters for inclusion in the November election. Proposition O would not allow any oil drilling within 1,000 feet of the coast, Proposition P would allow drilling. Concern was expressed by groups opposed to the drilling that allowing the onshore drilling adjacent to Santa Monica bay would allow the oil industry to then drill offshore within the bay itself. These concerns were both direct and indirect. The direct concerns were that slant drilling would be used into the bay from the onshore sites. The indirect concerns were that approval to drill onshore would be a signal that it would be acceptable politically/environmentally to drill offshore in Santa Monica bay at some future time. Occidental Petroleum maintained that no drilling from the onshore sites into the State tideland waters of Santa Monica bay would occur. Santa Monica bay is a State codified oil-and-gas sanctuary. Drilling may occur only if drainage has been confirmed and only from onshore sites out to 1 mile.

November 1988—Proposition O, allowing no drilling, was overwhelmingly approved by the voters. As a result, the project is currently considered "dead-in-the-water," and there are no lawsuits or appeals pending as of August 1989.

Platform Removals

In March 1988, Texaco began removing its platforms Helen and Herman, 30 years after they were set on leases in the Santa Barbara Channel acquired from the State of California. These platforms are only the second and third to be removed offshore California; Platform Harry, owned by Phillips Petroleum Company, was removed in 1974.

Platform Helen had been installed on State Lease 2206 in 1960 to develop the Cuarta offshore field. The platform itself was abandoned in 1973 when the last of its nine wells ceased production. Platform Herman was installed in 1964 as a satellite production platform for the 20 subsea wells that had been drilled on State lease 2725 to develop the Conception offshore field. Production from Platform Herman was shut down by 1983.

After the platforms' decks were severed and removed, the jackets' legs were cut below the mudline to avoid potential future bottom obstructions and then removed. Early discussions had centered around the use of the platforms and jackets as artificial reefs in Santa Monica bay. However, after objection by Santa Monica area officials, the platforms and jackets were eventually barged to Long Beach, cut up, and disposed of as scrap. The pipelines were plugged with concrete and anchored in place, and those sections in the surf zone were removed. Texaco cleared the bottom in a radius of 350 feet from each platform to remove obstacles to the trawl and gill nets of local fishermen. Platforms Helen and Herman were removed May 30, 1988. The accompanying pipelines were removed July 27, 1988.

Onshore Pipeline Network

In general, pipelines are the preferred method of transporting produced hydrocarbons. In long term analyses, the economics favor this method of transportation. Additionally, both the State of California and the MMS have stated their preference for shipment of hydrocarbons produced offshore to be transported in pipelines. Owing, in part, to California's long history of oil-and-gas production, there are areas where the onshore pipeline network is well developed.

In southern California, the onshore pipeline network is most developed in the Los Angeles area where numerous refineries and processing plants are located and where both offshore and coastal production has been present for decades. To a lesser extent, the onshore pipeline network near Ventura is also fairly well developed. This network is expanding to accommodate anticipated production from new offshore development projects.

All American Pipeline (Celeron)

The discovery of several large oil and gas fields in the northern Santa Barbara and Santa Maria offshore basins has created a processing dilemma. Several environmental and institutional barriers exist to processing all of these discoveries in California. The reservoirs appear substantial enough to merit production but the crude is heavy or viscous. Not all California refineries are set up to process this type of crude. Further, air quality restrictions limit the ability of many California refineries to expand to handle these volumes or specific gravities of crude oil. Lastly, the county of Santa Barbara indicated its desire to see all produced offshore crude oil transported out of the county.

In 1984, the All American Pipeline Company, a subsidiary of the Celeron Corporation, first proposed building an insulated, heated pipeline to move the crude produced offshore California to refineries located in Texas. In its approved configuration, the All American Pipeline will extend approximately 1,750 miles from Las Flores Canyon, west of Santa Barbara, California, to Webster, Texas, near Houston. The rated capacity of the All American Pipeline is 300 Mbpd, but with an increase in pump station abilities, the line could transport up to 450 Mbpd.

In May 1985, the Santa Barbara County Board of Supervisors approved a final route starting at Las Flores Canyon and running parallel to the coast until it reached Gaviota (referred to as the coastal segment) where it turns inland and runs north to the county line at the Cuyama River. In January 1986, Celeron filed an application with the county to build the Celeron Interconnect Pipeline, a 24-mile segment from Unocal's proposed Callendar Road processing facility in San Luis Obispo County to the Sisquoc pump station to service Platform Irene. The Celeron Interconnect Pipeline application has been withdrawn, and is no longer proposed. However, most of the pipeline is in place with completion of the entire line currently projected for the end of 1989, with startup in the first or second quarter of 1990.

A portion of the line, from Emidio, California, to McCamey, Texas, is now in interim operation with 80-100 Mbpd of crude being shipped. This crude is primarily of Kern County origin, but some has been Alaskan crude offloaded from tankers in Los Angeles and transshipped by an ARCO pipeline to a connection at Cadiz, east of Los Angeles.

August 1987—Except for construction of the Sisquoc pump station, installation of the Celeron Pipeline from the Cuyama River to Chevron's Gaviota Processing Plant is complete. Revegetation of the pipeline right-of-way continues.

November 1987—Celeron completed grading of the Sisquoc pump station. The Santa Barbara County Planning Commission approved the revisions to Celeron's FDP.

February 8, 1988—The Board of Supervisors approved an agreement with Celeron to settle the company's lawsuit against the county. The agreement resolved the jurisdictional dispute without payment of monetary damages; it allows for cooperation between the county and Celeron to assure that the pipeline is properly built under the U.S. Department of Transportation (DOT) standards.

May 1988—Construction of the Sisquoc pump station is complete.

November 29, 1988—The Planning Commission approved a Celeron request to construct a 24-inch feeder line and a booster pump station to link the GIMT to Celeron's Gaviota Pump Station. The Vista Del Mar School District appealed the approval, because the pipeline would cross their property.

January-February 1989—The Planning Commission approved the 24-inch feeder line and booster pump station from the GIMT to the Gaviota Pump Station. In April, the coastal development permits were issued.

May 1989—Celeron proposed to fill its pipeline system in Santa Barbara, San Luis Obispo, and Kern Counties with water. Approximately 64 acre-feet of water will be required and would be obtained from Kern County. The water will remain in the line until OCS-produced oil is available for shipping from the Gaviota Pump Station.

May 31, 1989—The Celeron Pipeline Company of California merged into the All American Pipeline Company. Construction began on the South Cuyama Fault pipeline replacement. This project involves the replacement of 660 feet of pipeline, which was too deep and not consistent with the approved Cuyama Fault Mitigation Plan.

Pacific Texas Pipeline

The Pacific Texas Pipeline (Pactex) is a proposed 1,030-mile pipeline with a rated capacity of 900 Mbpd from a new marine terminal at Los Angeles Harbor to a tank farm in Midland, Texas. The source of crude oil for this pipeline is the oil produced in Alaska and transported by tanker to various Pacific and Gulf of Mexico coastal refineries. Currently, this crude is tankered to the west coast of Panama, offloaded to a pipeline, transshipped to the east coast of Panama, loaded to another tanker, and shipped north to Gulf of Mexico coastal refineries.

The Pacific Texas Pipeline Company originally secured most of the permits that were required to commence construction of the Pactex by early 1986. A permit issued by the CCC for this project in March 1986 was recently extended to March 1989. This permit approves construction of a 106-acre site at Los Angeles Harbor and coastal pipeline installation. The CCC also recently approved construction and offsite mitigation measures in exchange for the landfill oil terminal at Los Angeles Harbor. In exchange, the Pacific Texas Pipeline Company has agreed to restore Batiquitos Lagoon in northern San Diego County at a cost of between $19 and $35 million. On January 14, 1989, the Bureau of Land Management executed an adverse cancellation of the Pacific Texas Pipeline Company's right-of-way grant for failure to pay the required rent.

Southern California Pipeline System

The Southern California Pipeline System (SCPS) emanated from an industry study group formed in 1980 to evaluate crude oil pipeline transportation needs for the coastal producing areas of south central California. The SCPS was designed to carry up to 330 Mbpd of oil from Santa Barbara County and the San Joaquin Valley to refineries in the Los Angeles area. As designed SCPS was subdivided into two sections: the Los Padres Pipeline from Gaviota to Emidio and the Angeles Pipeline from Emidio to five Los Angeles area refineries.

September 1987—The proposed Angeles Pipeline EIR was released. The adequacy of this EIR was challenged by several municipalities along its route as well as some private parties.

December 1987—Four Corners Pipeline Company, a subsidiary of ARCO, was the designated lead for this project until ARCO withdrew its support in December 1987. The remaining partners on the SCPS project are Chevron, SWEPI, and Texaco. Chevron Pipeline Company serves as the current designated lead. Under the CEQA, the California DOT was identified as lead agency for preparation of the project EIR. The U.S. Forest Service served as the NEPA lead for the EIS.

March 1988—The California DOT withdrew its notice of determination for the EIR, effectively stalling the pipeline, but also eliminating the litigation. As of 1989, the Chevron Pipeline Company had not decided whether to pursue the SCPS proposal further.

4. Issues Related to the OCS

The issues that are discussed within this chapter are related to the OCS oil and gas program and are presented to apprise readers of recent developments. More detailed information on several of these issues is presented in the publications listed in the "Additional Reading" section at the end of this chapter.

OCS Hard Minerals Program

The need for secure sources of domestic strategic minerals has long been recognized. Interest in offshore hard minerals predates World War II. Various Federal initiatives in this area have been undertaken since the 1950's. Jurisdiction over the mineral resources of the OCS falls under the purview of the Secretary of the Interior (see 47 FR 55313 and 48 FR 2450). The Secretary has delegated programmatic responsibilities for these resources to the MMS.

The MMS is currently developing a program to address exploration (prospecting), leasing, and development of OCS minerals other than oil, gas, and sulphur. Within the MMS, the Office of Strategic & International Minerals (OSIM) has the responsibility of developing the OCS hard minerals program. The OSIM has recently made advances in developing the regulatory frame-work within which the exploration and development of OCS hard minerals can proceed. The development of this regulatory framework is detailed in the adjoining sidebar.

Within the Pacific OCS Region, the OSIM has established two task forces designed to investigate the environmental, economic, and social implications of developing potential OCS hard minerals. The Gorda Ridge Technical Task Force, established in 1984, has been examining the potential of possible ocean mining of polymetallic sulfides from the Gorda Ridge offshore southern Oregon and northern California. The Oregon Black Sands Task Force, established in September 1988, is undertaking a preliminary analysis of the economic potential of strategic minerals identified in black sand deposits located offshore Oregon.

Gorda Ridge Polymetallic Sulfides

Since its establishment in 1984, the Gorda Ridge Task Force has continued a technical assessment of the economic, engineering, and environmental aspects of possible ocean mining of polymetallic sulfides from the Gorda Ridge. Funding and logistical support for the scientific program have been provided primarily by the MMS, USGS, NOAA, and the U.S. Navy.

During July and August of 1986, marine scientists observed and sampled polymetallic sulfide deposits containing iron, zinc, lead, copper, silver, and gold, while making a series of submersible dives with the U.S. Navy's *Sea Cliff* and the USGS research vessel *S.P. Lee* in 11,000-foot water depths about 150 miles off the coast of northern California.

MMS Marine Mining Regulatory Program

Exploration (Prospecting): Final rule issued on July 5, 1988 (53 FR 25242).

Leasing: Proposed rule issued on August 18, 1988 (53 FR 31424). Final rule issued on January 18, 1989 (54 FR 2042).

Development (Postlease): Proposed rule issued on August 18, 1988 (53 FR 31424). Final rule issued on January 18, 1989 (54 FR 2058).

The eight dives made by the *Sea Cliff* during 1986 were made at two of the domes where high heat flow values had been encountered during 1985 and where sulfides were dredged or photographed during 1985 and 1986.

Extensive zones of hydrothermal mineralization were observed at both locations. Several deposits exposed along the base of the volcanic domes are reported to be in excess of 600 feet across and to an approximate thickness of 100 feet. A number of specialists who are familiar with polymetallic sulfide deposits have stated that the data collected on the Gorda Ridge polymetallic sulfide deposits have characteristics resembling important world-class deposits being mined onshore.

In an effort to perform additional examinations of polymetallic sulfide deposits and expand environmental baseline information, a follow-up scientific dive program was coordinated by the Gorda Ridge Task Force and conducted by the *Sea Cliff* in September of 1988. Results of the dive program included discovery of a spectacular field of underwater hot springs, mineral deposits, and exotic animals. The significance of this discovery is that it provides a natural laboratory for scientists to further research formation of mineral deposits, exotic life forms, and the effects of hot springs on the ocean environment. On the basis of the information obtained by the task force and lack of industry interest, polymetallic sulfides on the Gorda Ridge are not a target for commercial development at this time and may not be for several decades. For this reason, a decision was made not to complete the final EIS as announced in the *Federal Register* in March 1988, and the September 1988 dive program effectively concluded the Gorda Ridge Task Force effort and MMS's involvement for the foreseeable future.

Hawaii Cobalt-Rich Manganese Crusts

In December 1989, the MMS and State of Hawaii completed the final EIS for the possible leasing of cobalt-rich manganese crusts adjacent to Hawaii and Johnston Islands. Release of the EIS to the public and a joint Federal-State press announcement is anticipated in the late February or early March. Preparation of the EIS was under the oversight of a Federal-State task force, established in 1984 by the Secretary of the Interior and the Governor of Hawaii. The EIS evaluates a possible offering of 26,910 square kilo-meters (approximately 6.65 million acres) for lease. The estimates of potential mineral resources in the proposed lease sale area are 2.6 million tonnes (metric tons) of cobalt, 1.6 million tonnes of nickel, and 81 million tonnes of manganese. Variable amounts of platinum ranging from 0.3 to 1.2 parts per million have been confirmed in the deposits. The deposits occur in the form of surficial crusts or pavements of oxide minerals in water depths from 800 to 2,400 meters on the flanks of volcanically formed islands and seamounts. No leasing decisions regarding this resource have been made.

A Federal-State of Hawaii cooperative agreement for "Marine Minerals Joint Planning and Review" was finalized on December 29, 1988. The agreement increases the participation of the State in planning and review of marine mining activities offshore Hawaii and Johnston Islands and coordination with the State on program and policy matters of mutual interest. Objectives of the agreement are to resolve issues of mutual interest, develop coordinated program and policy positions, coordinate legislative and regulatory initiatives, and oversee leasing and development activities.

The agreement calls for a "Joint Planning Arrangement" with two committees. One is a four-member Cooperative Steering Committee (CSC) to prepare joint plans, resolve issues, and work directly with DOI and State decisionmakers on program and policy issues. The other is a Coordination Committee to coordinate project activities and provide technical support to the CSC.

Oregon Black Sand Deposits

On May 3, 1988, Governor Goldschmidt wrote to MMS requesting the establishment of a Federal-State of Oregon task force to perform "a technical analysis of environmental impacts and economic potential of possible future extraction of strategic metals in black sand deposits" offshore Oregon. A cooperative agreement establishing the task force was subsequently signed on September 19, 1988. The first task force meeting was held October 18-19, 1988, in Gold Beach, Oregon, to discuss tasks necessary to conduct a preliminary resource assessment and economic analysis based on existing data.

The initial objectives of the task force are (1) a cursory economic and strategic resource analysis to the extent existing data permits and (2) the identification of additional data necessary to provide viability. A meeting to review the status of ongoing work was held in Otter Rock, Oregon, on May 25, 1989. This phase of the effort will be concluded in January 1990.

Coastal Zone Management

The U.S. Congress enacted the Coastal Zone Management (CZM) Act in 1972 and established goals to enhance the wise use and management of the Nation's coastal resources. Each coastal State was encouraged to develop a State program to address these goals and which, in turn, would be composed of local coastal programs. Each coastal State CZM program is submitted for approval as part of the national program. The national CZM program is administered by the NOAA's Office of Ocean and Coastal Resource Management (OCRM).

All three States adjoining the MMS Pacific OCS Region have approved State CZM programs. The individual CZM programs of the Pacific States were approved 1 year apart; the Washington CZM Program in 1976; the Oregon CZM Program 1977; and the California CZM Program in 1978. Each of these programs is in various phases of local implementation.

Section 312 of the CZM Act (16 U.S.C. 1458) requires that NOAA conduct a continuing review of the performance of each of the approved State CZM programs and that the evaluations be made available to the public. When it has concluded such an evaluation, NOAA informs the public by posting a notice of availability in the *Federal Register*. The most recent evaluations for the CZM programs of the three Pacific States were California on December 30, 1987 (52 FR 49185); Oregon on March 22, 1988 (53 FR 9347); and Washington on May 10, 1989 (54 FR 20175). On May 10, 1989, NOAA published in the *Federal Register* (54 FR 20175) a Notice of Intent to evaluate the California CZM Program. The evaluation continued through September 30, 1989.

The most recent Section 312 reviews of the Oregon and Washington CZM Programs concluded that they were making satisfactory progress. The NOAA concluded, however, that the California CZM Program was in need of improvements, particularly where their review of permit applicants' consistency certifications was concerned. This conclusion has led to litigation between NOAA and the CCC. This litigation was subsequently settled out of court with NOAA releasing all CZM funds obligated to California and California agreeing to establish information requirements for the CCC's consistency certification reviews for oil and gas projects on the OCS.

The CCC staff has prepared proposed revisions of informational requirements for OCS projects. The development of these new regulations is being done in consultation and coordination with the CCC and the affected Federal agencies, local governments, industry, and the public. Workshops were held November 29, 1988, in San Francisco and December 5, 1988, in Santa Barbara to receive public comment on the proposed revisions.

On January 11, 1989, the CCC authorized the staff to begin the official rulemaking process by submitting a notice of public hearing to the California Office of Administrative Law for publication. On April 11, 1989, the CCC held a public hearing to discuss public comments and action on the draft regulations. The CCC staff is preparing a report to the CCC on the comments received during the public comment period and the necessity for modifications to the proposed regulations in light of these comments. The staff anticipates scheduling the report for CCC consideration in October. If the CCC directs the staff to make substantial changes to the proposed regulations, the staff would request an authorization to commence a new rulemaking proceeding. If the CCC ultimately adopts changes to the regulations, the amendments would be submitted to the Office of Administrative Law. When the regulations are approved by the California Office of Administrative Law, they will be submitted to OCRM for incorporation into the California CZM Program.

For specific information on the CZM programs of any of the Pacific OCS Region States, or on the national program, contact the relevant offices listed below:

California Coastal Commission
631 Howard St.
San Francisco, CA 94105
Telephone: (415) 543-8555

Oregon Department of Land Conservation
& Development
1175 Court St., NE.
Salem, OR 97310
Telephone: (503) 378-4933

Shorelands Division
Department of Ecology
State of Washington (PV-11)
Olympia, WA 98504
Telephone: (206) 459-6777

Ocean & Coastal Resource Management
National Oceanic & Atmospheric Administration
1825 Connecticut Ave., NW.
Washington, DC 20235
Telephone: (202) 673-5115

Marine Sanctuaries

National Marine Sanctuaries

The National Marine Sanctuary Program is legislatively mandated by Title III of the Marine Protection, Research, and Sanctuaries Act (16 U.S.C. 1431 et seq.). The Act authorizes the Secretary of Commerce to designate areas of special national significance as marine sanctuaries to provide comprehensive, protective management of their conservation, recreational, ecological, historical, research, educational, or esthetic values. The procedures for considering and criteria for reviewing sanctuary candidates are outlined in the Marine Sanctuary Program Regulations (15 CFR 922). These regulations were recently revised as directed by Congress in its 1984 amendments to the Act (P.L. 98-498). The final rule containing the revised regulations was published in the *Federal Register* on October 28, 1988 (53 FR 43802), and became effective 30 days thereafter.

Of the eight established national marine sanctuaries, three are contained within the Pacific OCS Region: the Channel Islands National Marine Sanctuary (NMS) located offshore Santa Barbara, the Cordell Bank NMS offshore San Francisco, and the Gulf of the Farallones NMS located adjacent to San Francisco. Recent Congressional activity will mean that several more marine sanctuaries will be added within the Pacific OCS Region within the next several years.

The Cordell Bank is the eighth and newest NMS, designated on May 19, 1989, by Under Secretary of Commerce William Evans. The notice of proposed designation was published by NOAA on August 28, 1987 (52 FR 32563). An EIS was prepared for it and the public comment period ended on April 17, 1989. The sanctuary encompasses 397.05 square nautical miles, with a core area of 18.14 square nautical miles. The sanctuary is located 20 miles west of Point Reyes, northwest of San Francisco, and adjoining the Gulf of the Farallones NMS. A supplemental EIS was being prepared addressing OCS oil and gas leasing and development issues within the sanctuary. This EIS was never completed because Congress acted to prohibit oil and gas activities within the entire sanctuary. President Bush signed the congressional resolution into law (P.L. 101-74) on August 9, 1989, including the prohibition of oil and gas activities throughout the entire NMS area.

The designation of the proposed Monterey Bay NMS has been delayed. The public and scientific information gathered from the scoping meetings held in January 1989 have been reviewed and analyzed. The draft EIS, management plan (MP), and draft regulations are currently undergoing internal review. They were expected to be issued in the early summer of 1989, but are now expected in the fall of 1989. The designation date was also delayed from December 31, 1989, to June 30, 1990.

The draft EIS/MP and draft regulations for the proposed Western Washington Outer Coast NMS are expected to be released in November 1989, with public hearings anticipated for January 1990.

Public scoping meetings for the proposed Northern Puget Sound NMS are expected in November 1989. Meetings were held in August 1989 with representatives of the six Washington counties that might be affected by the designation, as well as with State agency representatives, public interest groups, and Indian tribal council members in anticipation of the public scoping meetings.

Title II of P.L. 100-627, signed by the President on November 7, 1988, required NOAA to issue notices of final designation for four new marine sanctuaries, three of which are within the Pacific OCS Region: Cordell Bank by December 31, 1988; Monterey Bay by December 31, 1989; and Western Washington Outer Coast by June 30, 1990. Two other sites within the Pacific OCS Region were also affected by this law. The NOAA is required to prepare an issuance of prospectus to Congress for a northern Puget Sound marine sanctuary site by March 31, 1991; the issuance requires that a draft EIS be prepared. The NOAA is also required by P.L. 100-627 to study and report to Congress on the appropriateness of designating Santa Monica Bay as a marine sanctuary, by November 1990. The law also makes certain procedural changes in the way the national program is conducted.

For further information on any of these Pacific OCS Region sites, or on the program in general, contact the following:

Pacific Regional Coordinator
Marine & Estuarine Management Division
NOS/NOAA/OCRM, Suite 714
1825 Connecticut Ave., NW.
Washington, DC 20235
Telephone: (202) 673-5126

State Marine Sanctuaries

Within the Pacific OCS Region only the State of California has established marine "sanctuaries" in State offshore waters. These informal sanctuaries were enacted to prevent oil and gas leasing. Under Section 6871.2 of the California Public Resources Code, the Legislature prohibited the SLC from offering for lease certain sections of the State's offshore lands. The sections to which this prohibition applies covered all State offshore lands except those already under lease and select others adjacent to Orange, Los Angeles, Ventura, and Santa Barbara Counties.

On October 26, 1988, the SLC used its discretion to extend the oil and gas sanctuary concept within California to those portions of Mendocino and Humboldt Counties not already included under Section 6871.2. The SLC adopted an administrative declaration that no oil and gas leasing and development will take place in this "sanctuary zone." The SLC adopted this declaration after the Governor vetoed a legislative initiative, Assembly Bill No. 284, that would have established a 6-year moratorium in the same area of northern California. Oregon has prohibited all oil-and-gas leasing of submerged tidelands for 6 years.

Distribution of Section 8(g) Funds

The U.S. Congress, in 1978, established a buffer zone on the federally controlled OCS adjacent to State controlled portions of U.S. offshore submerged lands in order to compensate the coastal States for the possibility of drainage of transboundary oil and gas resources. The 8(g) zone, named after the OCSLA provision, extends 3 nautical miles seaward of the Federal-State offshore boundary.

As amended, section 8(g) of the OCS Lands Act (43 U.S.C. 1337 (g)) provides that 27 percent of the escrowed bonuses, rents, and royalties derived between September 1978 and October 1986 from Federal OCS leases in the 8(g) zone be distributed to the coastal States adjacent to those leases. In addition, section 8(g) requires the MMS to make monthly payments to these same States based upon current revenues from the 8(g) zone.

According to the legislation that established section 8(g), the coastal States affected also will receive an additional $650 million over a 15-year period: 3 percent for the first 5 years; 7 percent for the next 5 years; and, 10 percent for the last 5 years. Over $370 million has been disbursed by MMS to California, including the initial distribution from the escrow account, the first two installment payments, and monthly payments through July 31, 1989.

Local Oil Initiatives

Numerous California cities and counties have approved ordinances that in one way or another affect offshore oil and gas development. These ordinances or local oil initiatives seek greater local control over offshore oil and gas developments, with some prohibiting any related activities or business within their communities. Table 20 on the next page lists the local communities that have approved local oil initiatives.

The original 13 communities enacting local oil initiatives were the city and county of San Francisco; the cities of Monterey, Morro Bay, Oceanside, San Diego, San Luis Obispo, and Santa Cruz; and the counties of Monterey, San Diego, San Luis Obispo, San Mateo, Santa Cruz, and Sonoma. Additional communities passing similar ordinances include the cities of Redondo Beach, Point Arena, Capitola, Pacific Grove, Half Moon Bay, Trinidad, San Clemente, and Fort Bragg and the counties of Santa Barbara, Mendocino, and Humboldt.

On August 7, 1987, the Western Oil and Gas Association (WOGA) [now called Western States Petroleum Association (WSPA)] and the National Ocean Industries Association (NOIA) filed suit in the U.S. District in Los Angeles naming the original 13 communities as defendants and claiming that the local oil initiatives violated the Federal supremacy, commerce, and due process clauses of the U.S. Constitution.

Table 20. *California Local Government Onshore Ordinances*

City	Date Passed	Type	County	Date Passed	Type
Santa Cruz	11/85	A	Santa Cruz	06/86	A
San Diego	11/86	P	Somoma	11/86	A
Oceanside	11/86	P	San Mateo	11/86	P
Morro Bay	11/86	P	Monterey	11/86	A
Monterey	11/86	A	San Luis Obispo	11/86	A
San Francisco	11/86	M	San Diego	11/86	P
San Luis Obispo	06/86	A	Mendocino	11/88	A
Point Arena	02/87	A	Humboldt	11/88	A
Redondo Beach	01/87	A	Santa Barbara	11/88	AV
Capitola	04/87	P			
Pacific Grove	05/87	P			
Half Moon Bay	11/87	P			
Trinidad	11/88	A			
San Clemente	11/88	A			
Fort Bragg	11/88	A			

A = Approval of onshore facility must include a vote of the people.
P = Prohibition on onshore facilities.
M = Moratorium for 2 years - Supervisors may make finding to vote a permanent ban after 2 years.
AV = Advisory vote in support of Supervisors' efforts to control oil and gas development.

On September 23, 1987, the California State Lands Commission (SLC) voted to intervene on behalf of the defendants. On April 21, 1988, the U.S. District Court Judge handed down a ruling in this case that (1) the supremacy clause was not violated, (2) only 3 of the 13 communities (cities of San Diego and Oceanside and county of San Diego) might violate the commerce clause—but further research was needed, and (3) the due process challenge was not judicially ready for review since no ordinance had been enforced yet.

Following this ruling SWEPI's San Miguel field development project came up for review. In January 1988, the San Luis Obispo County Board of Supervisors voted to approve SWEPI's development plan application with conditions. According to the San Luis Obispo County local oil initiative, this approval was not final until it was put to local voters. In June 1988, local voters denied SWEPI the requisite approval by voting 55 to 45 percent against the three related ballot measures.

Feeling that the due process issue was now ready for judicial review, WSPA and NOIA made a bid to refile their suit in the U.S. District Court in Los Angeles in July 1988. Arguments were made before the court in August, but on September 6, 1988, the District Court Judge denied this bid to refile. The judge based denial of the bid on the fact that SWEPI had not exhausted the administrative remedies available to it. The county had its local coastal program approved by the CCC in February 1988, and therefore, SWEPI could reapply to the county for its coastal development permit. This application would precipitate a new round of public hearings, county vote on the project, and another ballot measure.

In October 1988, WSPA filed suit in California Superior Court in San Francisco against the CCC and the County and Board of Supervisors of San Luis Obispo challenging approval of the amendment to the San Luis Obispo local coastal management program that incorportated the local oil inititative. The WSPA requested preliminary and permanent injunctions barring implementation of the initiative and forcing withdrawal of CCC approval for the local program. For further information on any of these local oil initiatives, contact the administrative offices of the relevant County Board of Supervisors or City Council.

Santa Barbara County Policy Developments

In developing permit conditions for Exxon's Santa Ynez and Chevron's Point Arguello projects, it became apparent to Santa Barbara County that the mitigation measures for various impacts would be contingent on future studies or programs. On December 17, 1984, the Board of Supervisors directed the Energy Division to work with the oil industry and the public to develop a work program and funding package for the development of any required new policies that would help guide the industry and county staff when mitigating project-related impacts. Issues such as facility consolidation limits, grid power availability, NGL pipelines, and permit enforcement were proposed for review and discussion.

South Coast Consolidation

In February 1985, the Board of Supervisors approved a work plan for the policy analysis. The first issue addressed was the south coast consolidation analysis. On April 15, 1985, the county released a status report entitled *Oil and Gas Policy Analysis*. The purpose of the analysis was to evaluate 14 policy and procedural issues associated with the planning of oil and gas facilities in Santa Barbara County.

In August 1985, the Board of Supervisors initiated amendments to the Comprehensive Plan, zoning ordinances, and the Local Coastal Program favoring consolidation of oil-and-gas processing at two sites, Gaviota and Las Flores Canyon, where new facilities were to be built by Chevron and Exxon.

September 15, 1987—The Planning Commission recommended to the Board of Supervisors adoption of amendments to the Comprehensive Plan, Coastal Plan, and related zoning ordinances to update the County's south coast consolidation policies. As approved, the policies are designed to limit the number of onshore processing sites between the City of Santa Barbara and Point Arguello that serve offshore oil and gas development. In addition to the Las Flores Canyon and Gaviota consolidated sites, Canada de la Huerta would be considered an overflow gas processing site should it be necessary in the future.

December 1987—The Board of Supervisors approved the amendments (5-0) and after dropping mention of Canada de la Huerta as an overflow site, a resolution that initiated a rezoning process for older non-consolidated oil and gas facilities on the south coast.

January 1988—The WSPA filed suit against Santa Barbara County asking the court for injunctive and declaratory relief in the form of a mandate compelling the county to refrain from implementing the policies under the premise that the policies violate the constitutional rights of their membership.

February 16, 1988—The Board of Supervisors approved the administrative guidelines for the new Determination of Exemption process that was established in the 1987 admendments. This process provides administrative relief for applicants who claim violation of a constitutionally protected, vested right within the scope of existing permits to process new oil and gas production at an onshore facility other than those approved under the County-designated, consolidated sites.

June 10, 1988—The CCC voted 11 to 0 to certify the South Coast Consolidation amendments to the County's Local Coastal Program.

September - November 1988—County staff began to examine new land-use zoning of existing oil and gas processing facilities along the south coast for the South Coast Consolidation Rezone program. In November, County staff completed a report discussing the proposed rezone of six oil and gas facility sites along the south coast from coastal-dependent industry to either agricultural or recreational designations. The facilities affected include the following:

- ARCO's Ellwood oil and gas processing facility;
- ARCO's Ellwood marine terminal and abandoned processing facilities;
- ARCO's Dos Pueblos oil and gas processing facilities;
- Phillips' Tajiguas gas processing facilities;
- SWEPI's Molino gas processing facilities; and
- Unocal's oil processing, storage, and marine terminal sites at Government Point and Little Cojo Bay.

North County Gas Facility Consolidation Policies

The North County consolidation policies were addressed in conjuncion with Unocal's Preliminary and FDP hearings on Point Pedernales. Unocal agreed to fund a county study to identify an environmentally preferable site in the North County for a consolidated gas facility. The Battles Gas Plant in Unocal's application will be considered an interim facility for their gas production. A Steering Committee for the North County Facility Siting Study, made up of government and industry representatives, met to identify tasks and reached a consensus on the screening and siting criterion to be applied in the siting study process. The study, which establishes screening and siting criteria for gas processing in the North County, has been completed. It is currently being considered by the county for adoption into the Comprehensive Plan.

Marine Emergency Management Study

As a result of its approval of the GIMT and Exxon's Las Flores Canyon Marine Terminal, the County of Santa Barbara decided it was necessary to assess the impact of increased oil and gas development, including vessel traffic in the Santa Barbara Channel. One of the approval conditions for both marine terminals was that the operators, the Gaviota Terminal Company and Exxon, would fund a Marine Emergency Management Study (MEMS) to assess potential hazards resulting from this increased development and vessel traffic particularly that from marine transportation of oil. Additionally, the study will inventory available response equipment in the area and will evaluate the effectiveness of existing emergency response capabilities and planning efforts. The MEMS, therefore, has three principal objectives:

1. to identify the types of accidents likely to occur offshore Santa Barbara County (the Hazard Assessment section),
2. to evaluate the local response capability for these accidents of existing county agencies and the oil industry (Analysis and Evaluation section), and
3. to identify measures that will reduce the likelihood of potential accidents and improve the effectiveness of emergency response (Recommendations section).

The Hazard Assessment section considered accidents of six different types:

1. ship grounding,
2. ship collision,
3. SALM spill,
4. platform spill,
5. tank farm spill, and
6. onshore pipeline spill reaching shore.

The study used 4 spill sizes at 15 locations, representative of the 6 accident types, and considered both fire and non-fire scenarios. The above combinations resulted in 120 scenarios whose probability of occurrence was then calculated. The study identified a number of potential marine safety issues, and recommended actions that should be taken to improve the overall emergency response system in the channel. This draft study was released for public comment on February 14, 1989. After comments were analyzed and incorporated, the final version of the MEMS was approved by the Board of Supervisors on June 27, 1989.

The Board also approved an implementation plan for the MEMS recommendations about the same time as the Gaviota Terminal Company, half of which must be implemented before they will be permitted to start up. Exxon would be required to implement the same recommendations should they decide to develop that part of their Santa Ynez Unit project.

After approving the implementation plan, the Santa Barbara County Board of Supervisors, among other things, directed county staff to initiate multi-jurisdictional contacts to secure written commitments from appropriate emergency response agencies to (1) implement a mandatory vessel traffic control system in the Channel, including mandatory vessel traffic lanes past Point Conception (this system would also include onshore radar and radio vessel guidance) and (2) enhance the funding and resources available to the appropriate agencies from private industry and other sources. Implementation of the MEMS recommendations will be handled by the county's Office of Emergency Management.

In August of 1989, the Office of Emergency Management reported to the Board of Supervisors regarding the progress of the implementation plan for the GIMT. Outstanding issues included revisions to the Gaviota Terminal Company's Oil Spill Contingency Plan, a mandatory vessel traffic control system, and the adequacy of Gaviota Terminal Company's Terminal and Mooring manuals. The Office of Emergency Management will continue to monitor the progress of the Gaviota Terminal Company in implementing the balance of the MEMS recommendations.

Tri-County Socioeconomic Monitoring Program

As offshore oil and gas activity has increased in the 1980's in the Santa Barbara Channel and Santa Maria Basin areas, there has been a consequent increase in onshore facilities that support these Federal and State offshore projects. Accompanying the increase in onshore facilities is an influx of skilled oil and gas personnel and additional supporting population into the counties of Ventura, Santa Barbara, and San Luis Obispo.

The magnitude of this influx and the impact it has on existing community services are the subject of the Socioeconomic Monitoring Program (SEMP) study. Several oil and gas, and pipeline companies have funded and participated in the development of the tri-county SEMP. Among these are Chevron, Texaco, Exxon, Unocal, and Celeron. Socioeconomic data for the SEMP are generated by the project-specific local or tri-county spending records of these companies and their contractors and from demographic surveys of their employees. A computer model developed for the SEMP uses expenditure data to predict immigrant population impacts generated by each project. These population data are combined with baseline data provided by the tri-county governments in an effort to estimate the impacts that each project has had or will have on public services, public finance, and housing availability. This program is used by local governments to mitigate significant impacts.

In December 1987, the third SEMP monitoring report, covering all four quarters of 1986, was released. Some of the findings indicated (1) the money spent by participating oil and gas companies in 1986 generated an estimated population impact of 2,259 persons in Santa Barbara County, of which 84 percent was allocated to the northern part of the county—primarily in Lompoc and Santa Maria, and (2) population impacts for Ventura and San Luis Obispo Counties during this time were estimated to be 1,300 and 167 persons, respectively.

On May 16, 1988, the Santa Barbara County Board of Supervisors approved the mitigation principles that were developed as a planning and assessment tool to enable the county, affected local jurisdictions, and the oil and gas industry to accurately attribute and implement any potential mitigation due to offshore oil and gas development. Ten mitigation principles were recognized and approved by the Board. The Energy Division of the county of Santa Barbara should be contacted for a copy of these principles and other reports regarding the SEMP study. Ventura County also adopted its mitigation program in 1989. Additionally during 1989, agreements were reached that have resulted in more than $400,000 in mitigation payments to Ventura County, the city of Lompoc, three school districts, and other special districts.

Additional Readings

Bureau of Mines. 1987. *An economic reconnaissance of selected sand and gravel deposits in the U.S. exclusive economic zone*. Open File Report 3-87. Available from the Bureau of Mines, Division of Minerals Availability, 2401 E. St. NW., Washington, DC 20241.

Bureau of Mines. 1987. *An economic reconnaissance of selected heavy mineral placer deposits in the U.S. exclusive economic zone*. Open File Report 4-87. Available from the Bureau of Mines, Division of Minerals Availability, 2401 E. St. NW., Washington, DC 20241.

Cruickshank, M.; Flanagan, J.P.; Holt, Buford; and Padan, J.W. 1987. *Marine mining on the Outer Continental Shelf—environmental effects overview*: MMS OCS Report 87-0035. Available from the Technical Publications Unit, Minerals Management Service, 381 Elden St., Herndon, VA 22070-4871.

Kulm, L.D. 1989. *Potential heavy mineral and metal placers on the southern Oregon continental shelf*: (ORESU-R-88-027). Available from Sea Grant Communications, Ads 402, Oregon State University, Corvallis, OR 97331.

Peterson, C.D., et al. 1988. *Marine placer studies in the Pacific Northwest*, in 31 *Oceanus* (3): Fall 1988, p. 21-28.

Woods Hole Oceanographic Institution. 1988. *U.S. marine sanctuaries*, in 31 *Oceanus* (1): Spring 1988, 96 p.

Appendix A: Bibliography of OCS Information Reports

The following is a regional listing of documents published by the OCS Information Program. Entries are arranged by title in reverse chronological order, listing the most recent publication first. Requests for copies of these publications should be directed to the following office:

Document Distribution Center
Offshore Information & Publications
Minerals Management Service, MS 4610
381 Elden St.
Herndon, VA 22070-4817
(703) 787-1080 or (FTS) 393-1080

Alaska Region

Arctic Subregion Summary Reports and Updates

- Arctic Summary Report, January 1985, Outer Continental Shelf Oil and Gas Activities in the Arctic and their Onshore Impacts. Christopher W. Lynch, Douglas L. Slitor, and Robert W. Rudolph. 1985. OCS Information Report, MMS 85-0022, U.S. DOI, 84 p.

- Arctic Summary Report Update, September 1983, Outer Continental Shelf Oil and Gas Activities in the Arctic and their Onshore Impacts. Jeffrey L. Deis and Robert Pierson. 1983. U.S. DOI, 58 p.

- Arctic Summary Report, January 1983, Outer Continental Shelf Oil and Gas Activities in the Arctic and their Onshore Impacts. Joanne Barnes Jackson and Frederick N. Kurz. 1983. U.S. DOI, 81 p.

- Update 1, May 1982, Outer Continental Shelf and Onshore Oil and Gas Activities and Impacts in the Arctic: A Summary Report, October 1981. Joanne Barnes Jackson and Barbara Cushmore Pretz. 1982. USGS Open-File Report 82-19, U.S. DOI, 76 p.

- Outer Continental Shelf and Onshore Oil and Gas Activities and Impacts in the Arctic: A Summary Report, October 1981. Joanne Barnes Jackson, B. Fritts Golden, Anne Stadnychenko, and Sharon Kolasinski. 1981. USGS Open-File Report 81-621, U.S. DOI, 137 p.

Bering Sea Subregion Summary Reports and Updates

- Bering Sea Summary Report, September 1984, Outer Continental Shelf Oil and Gas Activities in the Bering Sea and their Onshore Impacts. Jeffrey Deis. 1984. OCS Information Report, MMS 84-0076, U.S. DOI, 84 p.

- Bering Sea Summary Report, September 1983, Outer Continental Shelf Oil and Gas Activities in the Bering Sea and their Onshore Impacts. Jeffrey Deis, Robert Pierson, and Frederick N. Kurz. 1983. U.S. DOI, 81 p.

Gulf of Alaska Subregion Summary Reports and Updates

- Gulf of Alaska Summary Report Update, May 1984, Outer Continental Shelf Oil and Gas Activities in the Gulf of Alaska and their Onshore Impacts. Jeffrey D. Wiese. 1984. OCS Information Report, MMS 84-0030, U.S. DOI, 27 p.

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The Office of Offshore Information & Publications publishes these documents that may be of interest to you. The latest editions are listed on the next page.

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- OCS Regulations Related to Mineral Resource Activities on the Outer Continental Shelf. 1989. Offshore Information & Publications. MMS 88-0026, one volume.

Other Items of Interest

The OCS Information Program is now producing a map series. The following oversized plates have already been published.

- Alaska Series 89-0101
  (3 plates: Arctic, Bering, Chukchi)
- Pacific Series 89-0100
  (1 plate)

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Appendix B: Exploratory Wells Drilled on the Pacific OCS

OPD	Sale	Lease	Operator	Well no.	Spud	Complete	Water depth (feet)	Total depth (feet)
6A	P4	0167	ARCO	1	03/01/68	05/16/68	186	9,782
6A	P4	0169	Chevron	1	02/14/78	05/13/78	598	10,272
6A	P4	0170	Union	1	11/13/69	12/24/69	323	6,944
6A	P4	0173	ARCO	1	03/02/68	06/10/68	335	8,900
6A	P4	0176	Chevron	*1	01/24/77	05/21/77	371	9,910
6A	P4	0176	Chevron	2	08/16/78	10/05/78	368	7,272
6A	P4	0179	Chevron	1	05/19/78	07/18/78	431	8,135
6A	P4	0180	Exxon	1	07/28/70	09/09/70	1,497	10,453
6A	P4	0180	Exxon	*2	08/20/71	10/09/71	1,357	9,112
6A	P4	0181	Exxon	*1	10/11/71	11/10/71	1,478	12,040
6A	P4	0181	Exxon	*2	11/12/71	12/29/71	1,437	11,562
6A	P4	0181	Exxon	3	05/15/81	08/09/81	1,552	9,500
6A	P4	0182	Exxon	*1	02/03/70	05/30/70	1,046	14,358
6A	P4	0182	Exxon	*2	02/10/80	06/24/80	1,110	12,538
6A	P4	0182	Exxon	3	11/04/80	03/23/81	1,128	13,000
6A	P4	0182	Exxon	4	08/30/81	12/27/81	1,275	11,636
6A	P4	0183	Exxon	*1	03/13/71	04/17/71	1,023	12,760
6A	P4	0183	Exxon	2	08/14/82	11/06/82	1,017	8,912
6A	P4	0185	Shell	1	11/22/69	01/25/70	913	13,084
6A	P4	0186	Exxon	1	03/02/68	05/30/68	561	11,950
6A	P4	0186	Exxon	2	08/14/68	11/10/68	245	11,591
6A	P4	0186	Exxon	3	11/25/69	01/26/70	600	10,337
6A	P4	0187	Exxon	1	06/08/70	07/26/70	756	10,938
6A	P4	0187	Exxon	2	11/26/70	01/06/71	873	9,732
6A	P4	0187	Exxon	*3	11/11/82	02/28/83	1,280	12,124
6A	P4	0188	Exxon	1	12/03/68	01/27/69	941	12,867
6A	P4	0188	Exxon	*2	02/01/69	07/16/69	1,005	12,210
6A	P4	0188	Exxon	3	01/29/70	03/28/70	764	11,192
6A	P4	0188	Exxon	3-RD	04/01/70	06/07/70	764	12,975
6A	P4	0188	Exxon	4	03/16/71	04/12/71	812	11,460
6A	P4	0188	Exxon	4-RD	04/15/71	06/01/71	812	10,818
6A	P4	0188	Exxon	5	06/02/71	08/18/71	830	10,900
6A	P4	0188	Exxon	6	08/18/72	09/28/72	1,068	9,700
6A	P4	0190	Exxon	1	09/22/68	02/04/69	1,320	13,662
6A	P4	0190	Exxon	*2	04/02/69	07/24/69	1,046	12,498
6A	P4	0190	Exxon	3	07/26/69	11/25/69	1,245	12,402
6A	P4	0190	Exxon	4	06/07/71	08/04/71	1,008	11,050
6A	P4	0190	Exxon	4-RD	08/05/71	10/02/71	1,008	9,530
6A	P4	0191	Exxon	*1	01/07/71	03/11/71	1,212	12,725
6A	P4	0193	Exxon	*1	06/07/70	09/29/70	762	10,760
6A	P4	0193	Exxon	2	06/08/72	08/17/72	612	13,049
6A	P4	0193	Chevron	3	10/05/79	02/16/80	703	13,000
6A	P4	0193	Chevron	4	07/19/80	12/31/80	671	10,493
6A	P4	0193	Chevron	5	11/23/81	03/15/82	571	12,270
6A	P4	0193	Exxon	6	03/05/83	05/08/83	606	9,790
6A	P4	0193	Exxon	7	05/09/83	07/24/83	606	11,145
6A	P4	0194	Exxon	1	12/12/70	01/25/71	849	12,955
6A	P4	0194	Exxon	2	01/27/71	03/08/71	839	10,331
6A	P4	0195	Exxon	1	09/05/68	10/29/68	285	9,330
6A	P4	0195	Exxon	2	09/29/70	12/10/70	359	13,290
6A	P4	0196	Exxon	*	06/13/88	09/18/88	323	10,135
6A	P4	0197	Exxon	[illegible]	06/02/68	08/23/68	640	11,975
6A	P4	0197	Exxon	2	08/29/68	10/04/68	669	10,321
6A	P4	0197	Exxon	3	07/21/69	11/20/69	730	12,006
6A	35	0245	Chevron	1	06/17/80	07/17/80	301	6,781
6A	35	0289	Mobil	1	02/03/78	04/14/78	757	8,800
6A	48	0315	Texaco	*1	10/05/81	05/03/82	789	13,251
6A	48	0315	Texaco	2	01/16/82	05/03/82	891	10,200
6A	48	0315	Texaco	3	07/19/82	12/08/82	1,043	8,500
6A	48	0316	Chevron	*1	11/25/80	04/04/81	635	9,621
6A	48	0316	Chevron	2	05/30/82	10/05/82	561	11,416
6A	48	0317	Chevron	*1	12/05/80	05/22/81	325	8,955
6A	48	0318	Chevron	*1	01/02/81	04/27/81	262	9,643
6A	48	0318	Chevron	2	10/31/82	01/18/83	253	8,100
6A	48	0320	Conoco	1	03/06/83	06/05/83	824	[illegible],600
6A	48	0320	Conoco	*2	02/15/85	05/26/85	1,190	[illegible],472
6A	48	0321	Mobil	1	05/10/80	07/30/80	[illegible]37	[illegible]1,463
6A	48	0321	Mobil	*2	05/11/83	08/28/83	45[illegible]	10,500
6A	48	0321	Chevron	3	09/01/88	10/25/88	840	11,691
6A	48	0322	Conoco	*1	12/11/82	03/05/83	1,5[illegible]	9,343
6A	48	0324	Chevron	*1	05/01/81	08/25/81	1,[illegible]67	12,710
6A	48	0325	Conoco	1	05/07/82	07/04/82	836	11,957
6A	48	0326	Chevron	*1	01/13/82	04/14/82	376	12,557
6A	48	0333	Champlin	1	07/28/83	11/11/83	1,290	1[illegible],687

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OCS INFORMATION REPORT MMS 90-0013
U.S. DEPARTMENT OF THE INTERIOR

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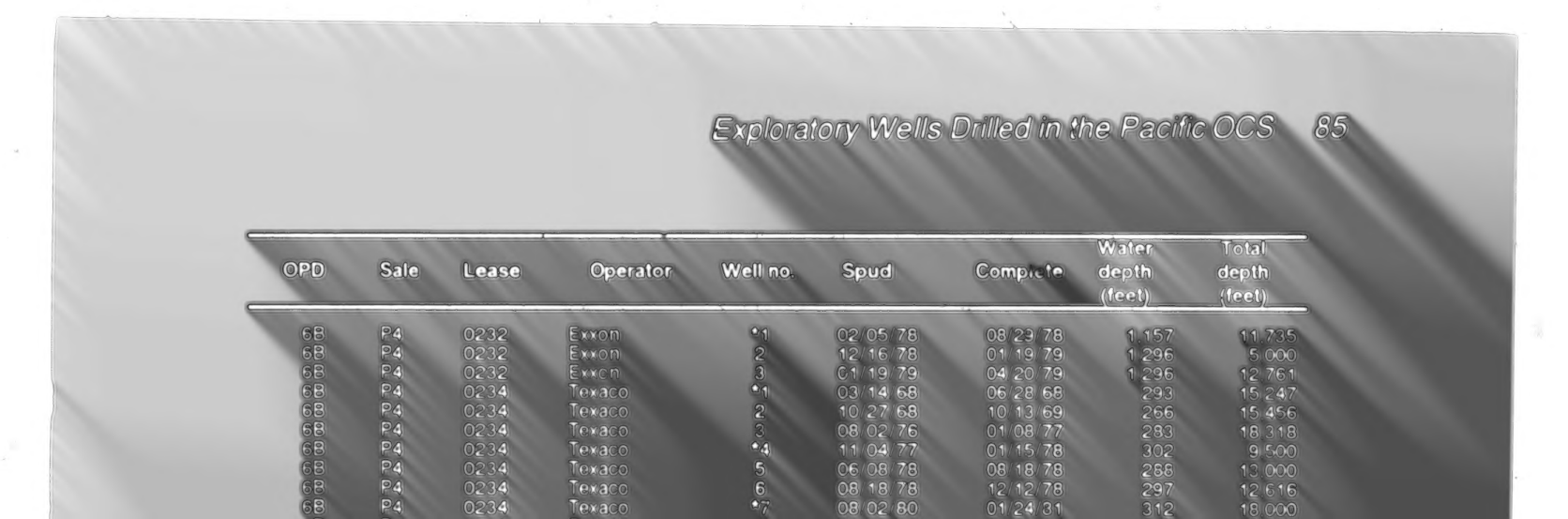
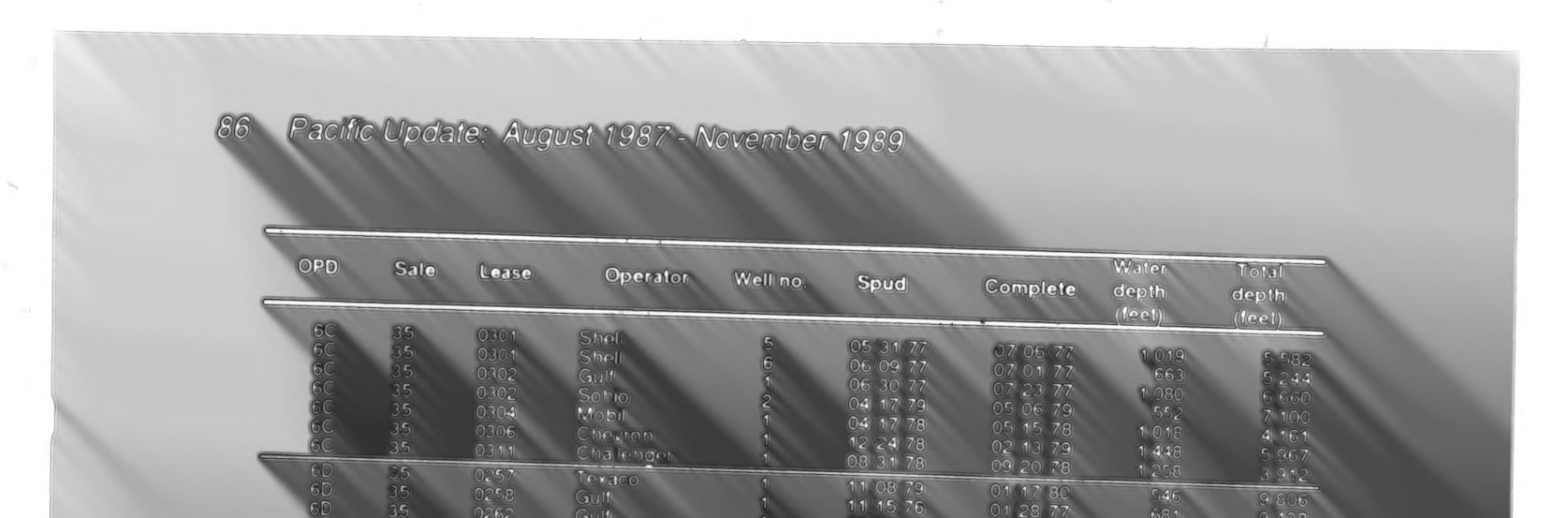
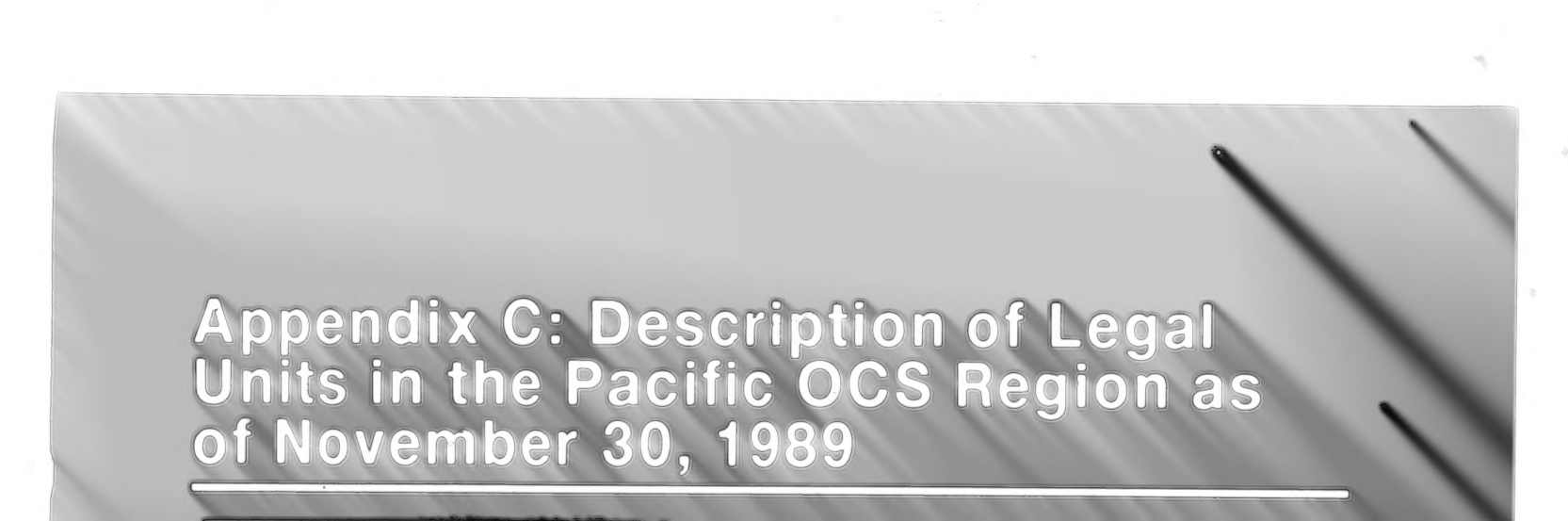
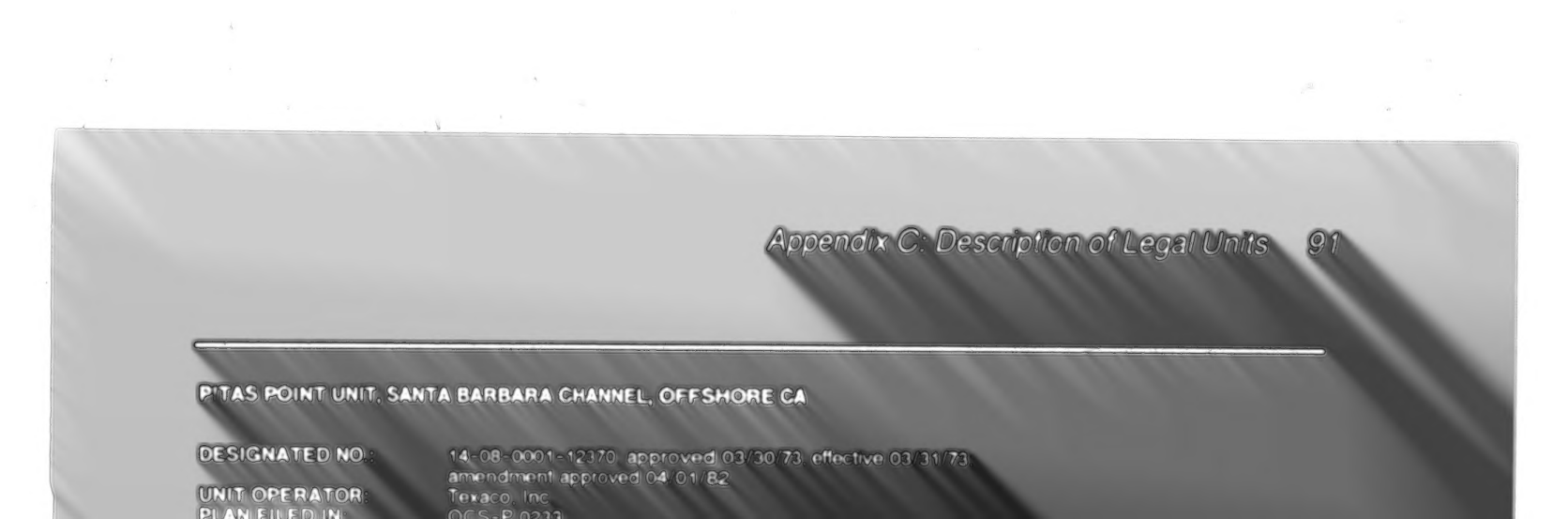
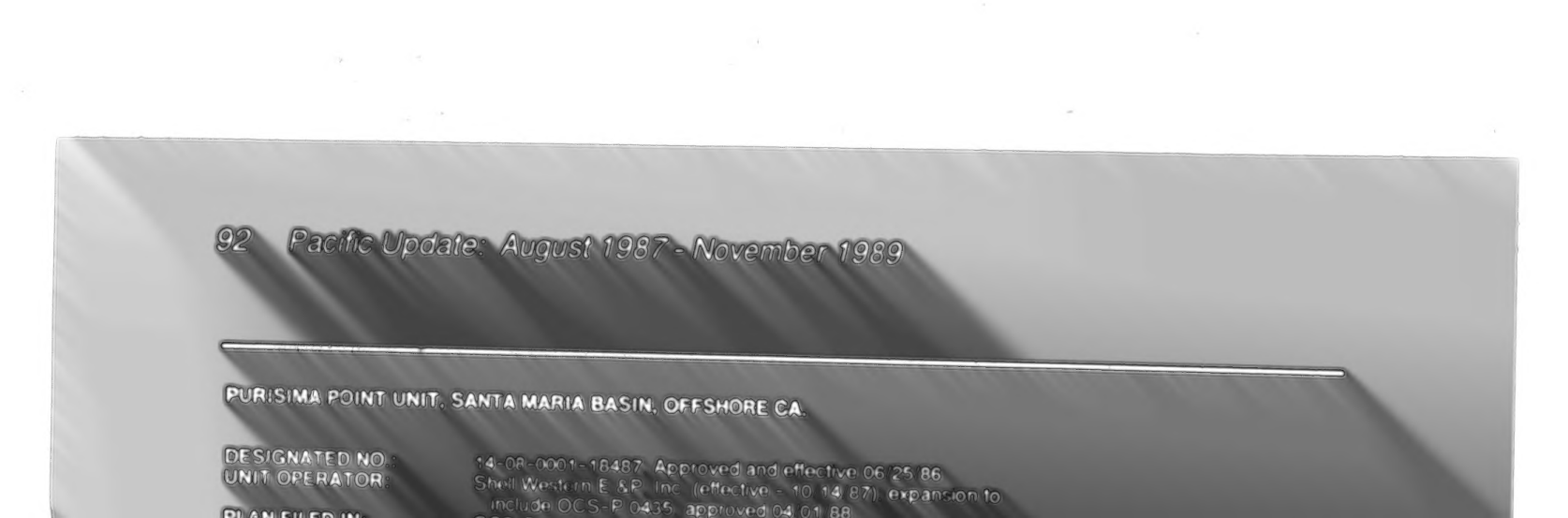
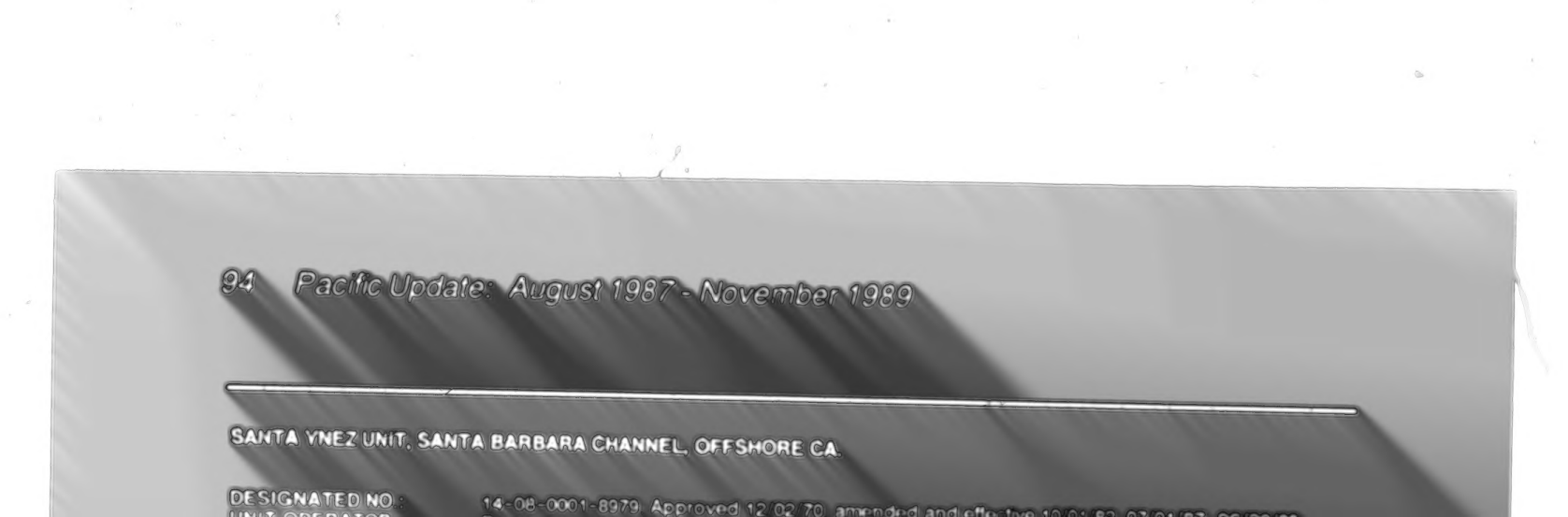
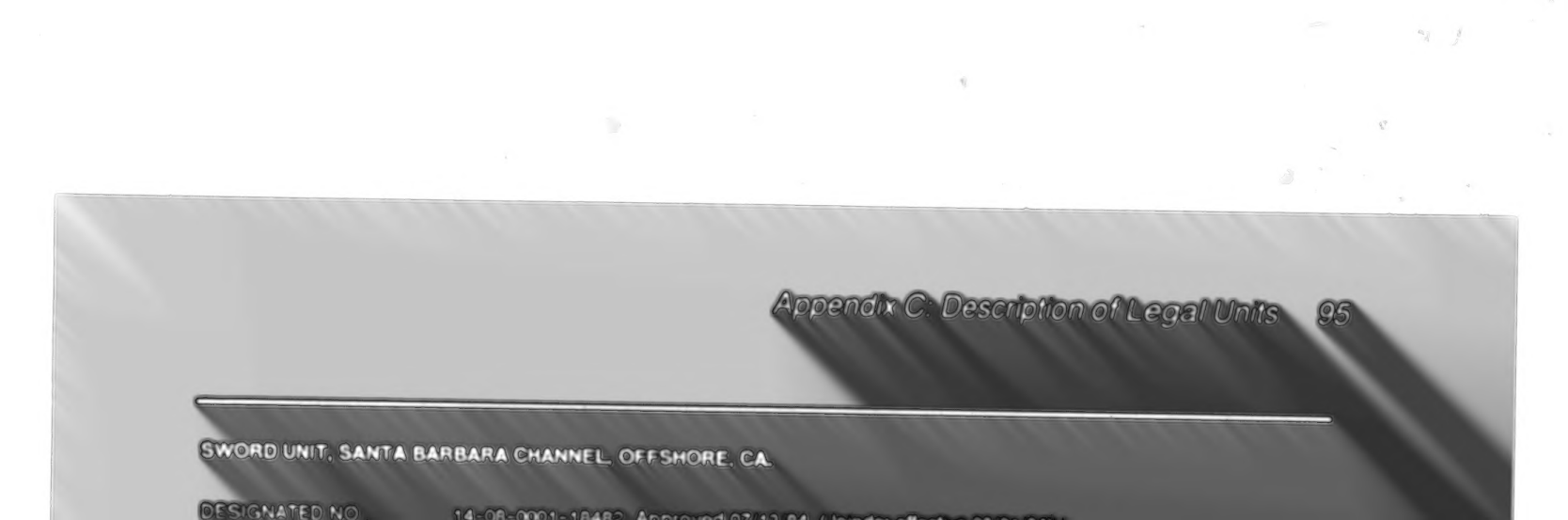
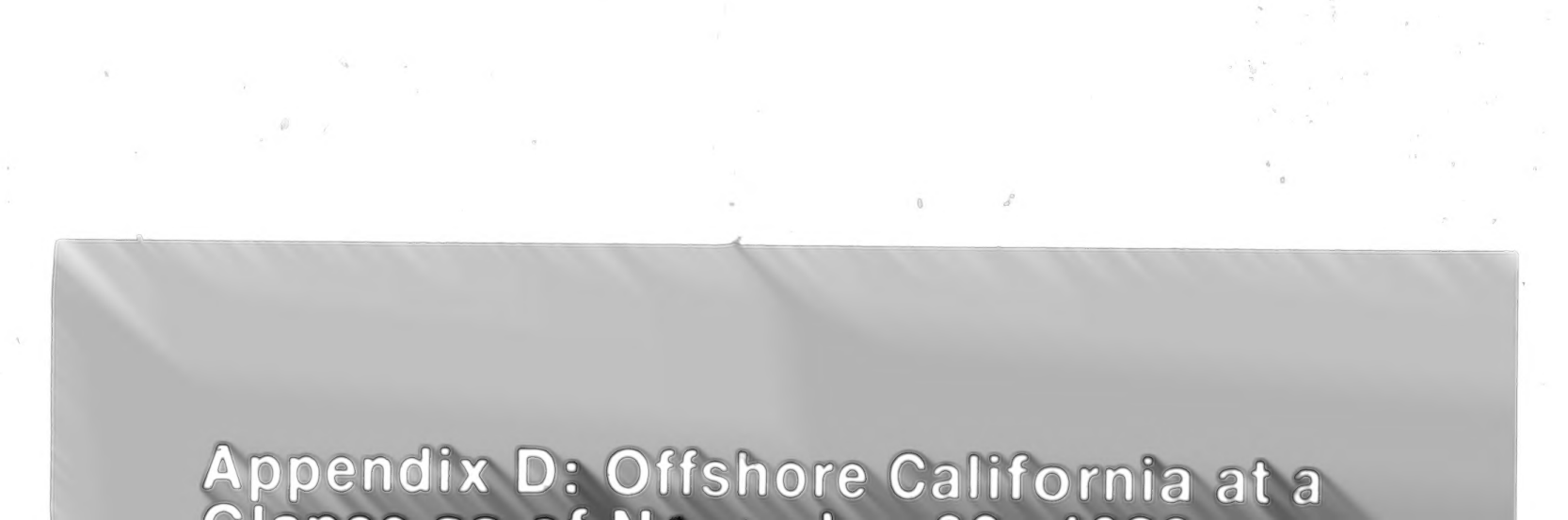




Appendix C: Description of Legal Units in the Pacific OCS Region as of November 30, 1989


Appendix D: Offshore California at a

OPD	Sale	Lease	Operator	Well no.	Spud	Complete	Water depth (feet)	Total depth (feet)
6A	48	0334	Conoco	1	11/09/81	01/12/82	1,303	13,959
6A	48	0338	Chevron	1	11/15/81	01/20/82	1,669	8,500
6A	48	0348	Chevron	*1	07/29/83	10/20/83	1,547	13,000
6A	48	0348	Chevron	2	10/21/83	11/17/83	1,547	8,491
6A	48	0351	Chevron	1	08/18/81	10/31/81	1,774	10,971
6A	48	0353	Exxon	1	05/29/82	08/10/82	1,911	13,588
6A	48	0358	Chevron	*1	04/09/81	08/14/81	1,635	14,500
6A	68	0456	Texaco	1	07/07/87	09/29/87	1,402	--
6A	68	0460	ARCO	*1	05/29/85	09/09/85	712	9,075
6A	68	0463	Texaco	1	08/01/84	11/07/84	748	12,854
6B	P3	0166	Phillips	1	02/18/67	03/03/67	155	6,121
6B	P3	0166	Phillips	3	03/03/67	03/12/67	165	5,000
6B	P3	0166	Phillips	2	03/12/67	03/22/67	150	5,000
6B	P3	0166	Phillips	5	03/22/67	04/02/67	145	4,940
6B	P3	0166	Phillips	6	04/03/67	05/02/67	156	5,939
6B	P3	0166	Phillips	*4	05/10/67	09/05/67	115	14,229
6B	P4	0199	Exxon	1	01/13/77	03/09/77	719	9,000
6B	P4	0199	Exxon	2	03/10/77	04/10/77	719	4,564
6B	P4	0202	Mobil	*1-A	01/30/69	07/03/69	100	8,452
6B	P4	0202	Mobil	2	10/25/70	12/15/70	158	7,657
6B	P4	0202	Mobil	4	04/05/75	05/25/75	102	6,510
6B	P4	0202	Mobil	3	05/26/75	07/04/75	99	7,160
6B	P4	0203	Mobil	1	07/04/69	07/21/69	212	6,000
6B	P4	0203	Mobil	*2	07/25/69	08/25/69	593	6,397
6B	P4	0203	Mobil	3	12/31/69	01/20/70	257	6,000
6B	P4	0203	Mobil	4	09/06/70	10/07/70	304	7,191
6B	P4	0203	Mobil	4-RD	10/07/70	10/24/70	304	7,452
6B	P4	0203	Union	5	11/23/84	12/19/84	812	6,000
6B	P4	0203	Union	6	12/20/84	01/22/85	812	7,142
6B	P4	0204	Chevron	*1	01/29/79	04/18/79	678	8,300
6B	P4	0205	Exxon	*1	09/10/70	11/25/70	719	12,801
6B	P4	0205	Exxon	2	12/31/71	01/30/72	768	9,000
6B	P4	0205	Chevron	3	02/28/83	05/13/83	719	9,822
6B	P4	0207	Chev/Stand	1	03/03/72	04/04/72	80	9,145
6B	P4	0208	Chev/Stand	1	06/16/68	08/30/68	168	12,854
6B	P4	0208	Chevron	2	09/19/79	10/05/79	394	5,600
6B	P4	0208	Chevron	3	10/06/79	11/24/79	394	9,681
6B	P4	0209	Chev/Stand	1	09/20/74	12/25/74	212	9,826
6B	P4	0209	Chevron	2	06/27/79	09/15/79	715	7,700
6B	P4	0212	Exxon	1	12/13/75	02/21/76	907	8,963
6B	P4	0215	Chev/Stand	*1	03/31/73	08/06/73	181	10,130
6B	P4	0215	Chevron	2	06/02/79	10/31/79	102	10,180
6B	P4	0215	Chevron	3	02/19/80	04/23/80	93	10,760
6B	P4	0215	Chevron	4	03/28/83	06/09/83	109	10,238
6B	P4	0216	Union	*1	10/18/70	03/09/71	135	12,154
6B	P4	0216	Union	2	03/14/76	07/16/76	225	9,950
6B	P4	0216	Union	3	11/29/78	03/10/79	185	8,943
6B	P4	0216	Union	4	03/11/79	04/03/79	185	7,740
6B	P4	0217	Chev/Stand	*1	12/27/74	04/05/75	316	9,990
6B	P4	0217	Chev/Stand	2	12/30/75	03/12/76	347	9,450
6B	P4	0217	Chevron	3	05/21/84	08/06/84	274	9,931
6B	P4	0218	Pauley	1	03/24/68	05/31/68	456	11,661
6B	P4	0218	Pauley	2	06/02/68	06/29/68	361	6,306
6B	P4	0218	Pauley	2-RD	06/30/68	07/15/68	361	7,588
6B	P4	0218	Pauley	3	07/16/68	08/09/68	565	6,718
6B	P4	0218	Pauley	4	08/11/68	09/01/68	537	7,115
6B	P4	0218	Pauley	5	09/02/68	09/14/68	551	5,004
6B	P4	0218	Pauley	6	11/27/68	01/03/69	480	10,654
6B	P4	0218	Pauley	7	01/03/69	01/24/69	339	6,968
6B	P4	0219	Union	1	08/12/78	10/06/78	472	9,685
6B	P4	0220	Gulf	1	04/12/77	06/24/77	535	10,011
6B	P4	0223	Exxon	1	04/27/79	07/07/79	1,281	12,219
6B	P4	0226	Pauley	1	08/15/68	10/16/68	288	13,122
6B	P4	0227	Mobil	1	02/18/68	04/26/68	325	11,620
6B	P4	0227	Gulf	2	02/23/76	08/01/76	411	14,645
6B	P4	0227	Union	3	03/25/78	04/10/78	312	4,920
6B	P4	0227	Union	4	04/11/78	05/17/78	312	8,325
6B	P4	0229	Gulf	1	04/28/68	08/13/68	351	12,125
6B	P4	0231	Exxon	1	08/05/68	09/19/68	994	9,630
6B	P4	0231	Exxon	2	06/02/77	09/12/77	992	8,867
6B	P4	0231	Exxon	3	09/14/77	10/16/77	1,007	8,803
6B	P4	0231	Exxon	4	07/16/79	09/17/79	999	9,775
6B	P4	0231	Sun	5	12/17/83	10/10/84	584	17,575

OPD	Sale	Lease	Operator	Well no.	Spud	Complete	Water depth (feet)	Total depth (feet)
6B	P4	0232	Exxon	*1	02/05/78	08/29/78	1,157	11,735
6B	P4	0232	Exxon	2	12/16/78	01/19/79	1,296	5,000
6B	P4	0232	Exxon	3	01/19/79	04/20/79	1,296	12,761
6B	P4	0234	Texaco	*1	03/14/68	06/28/68	293	15,247
6B	P4	0234	Texaco	2	10/27/68	10/13/69	266	15,456
6B	P4	0234	Texaco	3	08/02/76	01/08/77	283	18,318
6B	P4	0234	Texaco	*4	11/04/77	01/15/78	302	9,500
6B	P4	0234	Texaco	5	06/08/78	08/18/78	288	13,000
6B	P4	0234	Texaco	6	08/18/78	12/12/78	297	12,616
6B	P4	0234	Texaco	*7	08/02/80	01/24/81	312	18,000
6B	P4	0235	Exxon	1	05/01/68	08/13/68	310	15,290
6B	P4	0235	Exxon	2	10/30/68	11/24/68	298	4,903
6B	P4	0238	Exxon	*1	06/30/80	11/01/80	1,146	12,160
6B	P4	0238	Exxon	2	03/25/81	05/13/81	1,115	12,150
6B	P4	0240	Sunray	01	05/17/68	06/08/68	176	5,000
6B	P4	0240	Sunray	*2	07/05/68	08/03/68	187	4,312
6B	P4	0240	Sunray	03	08/06/68	08/23/68	196	3,773
6B	P4	0240	Sunray	04	08/25/68	09/05/68	189	4,612
6B	P4	0240	Sunray	05	09/06/68	09/23/68	166	5,700
6B	P4	0240	Sunray	06	09/25/68	10/08/68	188	4,375
6B	P4	0240	Sunray	07	10/11/68	10/24/68	188	4,984
6B	P4	0240	Sunray	08	10/25/68	11/04/68	193	4,950
6B	P4	0240	Sunray	08-RD1	11/05/68	11/09/68	193	4,511
6B	P4	0240	Sunray	08-RD2	11/11/68	11/16/68	193	4,950
6B	P4	0240	Sun	09	11/19/76	12/28/76	175	4,774
6B	P4	0240	Sun	10	12/29/76	01/20/77	175	4,925
6B	P4	0241	Union	*2	03/01/68	03/23/68	188	3,775
6B	P4	0241	Union	01	03/05/68	08/02/68	185	13,292
6B	P4	0241	Union	03	04/11/68	04/20/68	198	3,560
6B	P4	0241	Union	04	02/02/69	02/11/69	202	1,990
6B	48	0335	Chevron	*1	08/11/81	11/08/81	1,649	12,500
6B	48	0335	Chevron	2	01/21/82	05/29/82	1,677	13,672
6B	48	0337	Chevron	1	01/23/83	03/26/83	225	11,102
6B	48	0361	Shell	1	05/06/82	07/29/82	68	11,000
6B	48	0361	Shell	2	07/31/82	09/16/82	71	10,713
6B	48	0361	Shell	3	09/16/82	10/25/82	71	11,679
6B	48	0361	Shell	4	09/15/83	11/26/83	70	17,850
6B	68	0467	Exxon	1	01/05/84	02/23/84	934	11,692
6B	68	0467	Sun	*2	11/23/84	09/25/85	661	16,500
6B	68	0467	Sun	3	12/02/86	03/12/87	660	10,123
6B	68	0469	ARCO	*1	12/11/86	02/19/87	721	10,400
6B	68	0469	ARCO	2	02/20/87	07/05/87	721	10,246
6B	68	0472	Champlin	1	11/20/83	04/23/84	329	14,300
6B	68	0473	Chevron	1	02/17/84	05/14/84	300	12,113
6B	68	0478	Chevron	*1	03/14/84	06/10/84	453	10,616
6B	68	0478	Chevron	2	10/29/88	--	380	--
6B	68	0479	Texaco	1	10/20/84	01/21/85	79	14,163
6B	68	0479	Unocal	*2	06/11/87	07/29/87	75	8,900
6C	35	0293	Shell	1	12/15/76	01/22/77	90	6,805
6C	35	0295	Texaco	1	10/20/76	11/22/76	141	6,053
6C	35	0295	Texaco	2	11/22/76	01/07/77	141	10,531
6C	35	0295	Texaco	3	07/03/77	08/04/77	159	5,458
6C	35	0295	Champlin	4	08/25/81	09/13/81	144	4,323
6C	35	0296	Chevron	01	07/20/76	11/24/76	175	10,895
6C	35	0296	Chevron	02	11/25/76	01/17/77	188	6,090
6C	35	0296	Chevron	03	01/17/77	01/31/77	188	4,960
6C	35	0296	Chevron	*04	02/01/77	03/06/77	188	5,338
6C	35	0296	Chevron	05	03/07/77	03/27/77	153	4,680
6C	35	0296	Chevron	06	03/27/77	04/09/77	153	5,115
6C	35	0296	Chevron	07	04/10/77	07/01/77	154	7,505
6C	35	0296	Chevron	08	07/12/77	08/20/77	158	6,076
6C	35	0296	Chevron	09	08/21/77	09/20/77	158	6,675
6C	35	0296	Chevron	10	09/20/77	10/19/77	158	5,726
6C	35	0296	Chevron	11	10/19/77	11/07/77	158	6,700
6C	35	0296	Chevron	12	11/09/77	02/05/78	136	10,973
6C	35	0296	Chevron	13	02/05/78	03/18/78	136	6,525
6C	35	0298	Shell	1	01/23/77	02/20/77	110	7,200
6C	35	0300	Shell	*1	04/10/77	05/10/77	427	4,850
6C	35	0300	Shell	2	05/11/77	06/07/77	427	5,002
6C	35	0301	Shell	*1	07/02/76	10/18/76	659	8,317
6C	35	0301	Shell	2	10/21/75	12/26/76	633	6,266
6C	35	0301	Shell	3	01/03/77	05/13/77	856	8,084
6C	35	0301	Shell	4	05/14/77	05/28/77	856	4,962

OPD	Sale	Lease	Operator	Well no.	Spud	Complete	Water depth (feet)	Total depth (feet)
6C	35	0301	Shell	5	05/31/77	07/06/77	1,019	5,582
6C	35	0301	Shell	6	06/09/77	07/01/77	663	5,244
6C	35	0302	Gulf	1	06/30/77	07/23/77	1,080	6,660
6C	35	0302	Sohio	2	04/17/79	05/06/79	552	7,100
6C	35	0304	Mobil	1	04/17/78	05/15/78	1,018	4,161
6C	35	0306	Chevron	1	12/24/78	02/13/79	1,448	5,967
6C	35	0311	Challenger	1	08/31/78	09/20/78	1,258	3,912
6D	35	0257	Texaco	1	11/08/79	01/17/80	546	9,806
6D	35	0258	Gulf	1	11/15/76	01/28/77	681	9,498
6D	35	0262	Gulf	1	02/01/77	03/31/77	1,080	9,861
6D	35	0272	Exxon	1	07/24/77	01/26/78	275	13,367
6D	35	0276	Marathon	1	02/15/80	05/04/80	483	10,054
6D	35	0277	Shell	1	01/02/77	04/06/77	205	11,504
6D	35	0286	Texaco	1	01/11/77	07/01/77	506	12,025
NI 10-3	P1	0060	Chev/Stand	Oceanol	09/29/64	01/07/65	550	8,020
NI 10-3	53	0394	Texaco	1	04/12/86	05/16/86	1,037	5,475
NI 10-3	53	0395	Texaco	*1	08/09/83	10/09/83	774	7,800
NI 10-3	53	0396	Phillips	*1	06/17/82	09/26/82	544	7,743
NI 10-3	53	0397	Phillips	1	05/20/83	06/23/83	312	3,666
NI 10-3	53	0397	Phillips	*2	02/23/84	06/06/84	400	8,055
NI 10-3	53	0402	Phillips	1	06/28/83	09/12/83	653	3,687
NI 10-3	53	0403	Phillips	*1	04/10/85	07/04/85	489	6,900
NI 10-6	53	0406	Phillips	1	12/18/83	02/18/84	1,355	5,735
NI 10-6	53	0408	Phillips	*1	09/29/84	01/30/85	550	6,200
NI 10-6	53	0409	Oxy Petroluem	*1	11/02/82	02/02/83	507	6,630
NI 10-6	53	0409	Oxy Petroluem	2	02/07/83	05/08/83	436	8,400
NI 10-6	53	0409	Oxy Petroluem	3	08/30/83	11/25/83	356	9,600
NI 10-6	53	0409	Oxy Petroluem	4	11/28/83	02/18/84	502	7,499
NI 10-6	53	0409	Oxy Petroluem	5	02/19/84	03/20/84	502	6,878
NI 10-6	53	0409	Oxy Petroluem	6	03/23/84	05/11/84	440	7,917
NI 10-6	53	0411	Exxon	1	03/21/82	05/17/82	1,196	5,303
NI 10-6	53	0413	Conoco	1	06/06/83	07/25/83	1,017	4,921
NI 10-6	53	0415	Read. & Bates	*1	01/02/84	04/17/84	419	9,916
NI 10-6	53	0415	Sun	2	07/22/84	09/25/84	379	6,400
NI 10-6	53	0416	Read. & Bates	*1	04/19/84	07/17/84	348	6,000
NI 10-6	53	0422	Sun	*1	09/29/85	01/10/86	344	8,300
NI 10-6	53	0424	Texaco	1	03/09/83	04/28/83	514	4,012
NI 10-6	53	0425	ARCO	1	05/24/82	07/29/82	398	3,681
NI 10-6	53	0425	ARCO	2	09/29/82	11/10/82	405	5,750
NI 10-6	53	0426	Phillips	1	09/06/83	11/18/83	294	8,073
NI 10-6	53	0427	Pennzoil	*1	06/15/83	09/06/83	264	6,160
NI 10-6	53	0430	ARCO	1	07/30/82	09/26/82	325	5,772
NI 10-6	53	0434	ARCO	*1	06/15/86	08/15/86	--	5,902
NI 10-6	53	0435	Shell	*1	11/02/82	01/31/83	246	6,900
NI 10-6	53	0437	ARCO	1	12/19/83	03/06/84	268	6,609
NI 10-6	53	0437	ARCO	*2	08/13/84	10/16/84	282	5,698
NI 10-6	53	0439	Phillips	1	01/24/85	04/03/85	154	8,500
NI 10-6	53	0440	Exxon	*1	07/31/83	10/10/83	265	5,510
NI 10-6	53	0440	Exxon	2	10/12/83	01/01/84	305	5,839
NI 10-6	53	0441	Union	*1	11/11/82	01/16/83	266	4,489
NI 10-6	53	0441	Union	2	01/17/83	03/22/83	246	5,430
NI 10-6	53	0443	Chevron	*1	04/20/82	06/13/82	891	6,967
NI 10-6	53	0443	Chevron	2	01/29/84	03/12/84	744	5,800
NI 10-6	53	0444	Arco	1	05/24/83	09/12/83	218	8,135
NI 10-6	53	0446	Chevron	*1	01/13/83	03/29/83	1,020	6,481
NI 10-6	53	0446	Chevron	2	06/04/83	07/24/83	778	6,735
NI 10-6	53	0449	Texaco	*1	05/01/83	08/06/83	878	8,071
NI 10-6	53	0449	Sun	2	09/15/85	11/16/85	1,418	7,600
NI 10-6	53	0450	Chevron	*1	04/25/82	10/21/82	392	11,950
NI 10-6	53	0450	Chevron	2	10/08/82	02/23/83	844	9,257
NI 10-6	53	0450	Chevron	3	10/25/82	02/11/83	426	8,881
NI 10-6	53	0450	Chevron	4	11/21/83	01/28/84	1,097	8,100
NI 10-6	53	0451	Chevron	*1	09/29/82	02/26/83	301	10,704
NI 10-6	53	0451	Chevron	2	06/12/84	09/06/84	323	9,073
NI 10-6	53	0452	Chevron	*1	03/03/83	05/16/83	278	7,430
NI 10-6	53	0452	Chevron	2	04/01/83	05/29/83	330	7,496
NI 10-6	53	0452	Chevron	3	10/12/83	12/28/83	310	8,200
NI 10-6	53	0452	Chevron	4	11/22/83	02/15/84	266	9,400
NI 10-6	53	0452	Chevron	5	12/29/83	03/14/84	310	8,580
NI 10-6	RS-2	0496	Texaco	1	05/18/86	06/25/86	1,200	6,125
NJ 10-2	P1	0030	Shell	1ET	03/10/65	06/09/65	312	10,636
NJ 10-2	P1	0032	Shell	1ET	11/25/66	01/13/67	389	9,609
NJ 10-2	P1	0033	Shell	1ET	10/24/66	11/10/66	414	4,719
NJ 10-5	P1	0027	Shell	1ET	11/17/64	11/29/64	348	3,234
NJ 10-5	P1	0051	Shell	1ET	12/22/63	01/10/64	368	1,170
NJ 10-5	P1	0051	Shell	2ET	08/02/64	10/03/64	363	10,466

OPD	Sale	Lease	Operator	Well no.	Spud	Complete	Water depth (feet)	Total depth (feet)
NJ 10-5	P1	0053	Shell	1ET	12/02/64	12/26/64	346	8,058
NJ 10-5	P1	0055	Shell	1ET	10/12/64	11/06/64	414	7,477
NJ 10-5	P1	0055	Shell	2ET	01/03/65	01/23/65	421	7,261
NJ 10-5	P1	0055	Shell	2AET	01/24/65	02/03/65	421	7,297
NJ 10-5	P1	0058	Shell	1ET	01/18/67	02/05/67	440	7,881
NJ 10-8	P1	0035	Shell	1ET	09/01/67	09/29/67	328	7,736
NJ 10-8	P1	0036	Shell	1ET	02/11/67	03/17/67	324	9,490
NJ 10-8	P1	0039	Shell	1ET	02/16/65	03/03/65	200	5,632
NJ 10-8	P1	0041	Shell	1ET	09/20/63	12/13/63	250	4,700
NK 10-1	P2	0112	Pan American	1	04/04/67	05/14/67	352	6,146
NK 10-7	P1	0007	Exxon	1	07/12/64	07/27/64	250	897
NK 10-7	P1	0012	Exxon	1	07/30/64	08/08/64	298	2,964
NK 10-7	P1	0014	Shell	1ET	06/17/65	07/07/65	393	7,377
NK 10-7	P1	0019	Shell	1ET	07/11/65	07/30/65	574	7,779
NL 10-4	P2	0072	Shell	1ET	10/28/65	03/14/66	469	8,219
NL 10-4	P2	0075	Shell	1ET	06/10/66	07/03/66	408	10,160
NL 10-4	P2	0141	Pan American	1	05/23/67	07/09/67	290	10,368
NL 10-4	P2	0150	Shell	1ET	03/24/66	04/17/66	237	8,699
NL 10-4	P2	0150	Shell	1AET	04/17/66	06/05/66	237	13,179
NL 10-4	P2	0155	Shell	1ET	07/11/67	08/19/67	230	11,162
NL 10-10	P2	0087	Shell	1ET	08/07/65	08/25/65	321	3,348
NL 10-10	P2	0087	Shell	2ET	08/27/65	10/20/65	324	8,353
NL 10-10	P2	0093	Union	Grebel	08/12/65	10/17/65	195	10,010
NL 10-10	P2	0103	Chev/Stand	Nautll	04/24/65	08/05/65	419	12,628
NL 10-10	P2	0130	Union	Fulmrl	07/07/66	08/24/66	404	12,285

(*) Wells determined producible in paying quantities under terms of OCS Order No. 4.

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Appendix C: Description of Legal Units in the Pacific OCS Region as of November 30, 1989

ANACAPA UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.: 487002, Approved and effective 05/22/87
UNIT OPERATOR: Chevron U.S.A., Inc.
PLAN FILED IN: OCS-P 0472
STATUS: SOP approved to 05/31/91

The Unit embraces 18,720 acres, more or less, comprised of the following 5 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0472	6B	49N 64W	S 1/2	2880.00		
OCS-P 0473	6B	49N 63W	S 1/2	2880.00		
OCS-P 0474	6B	49N 62W	SW 1/4	1440.00		
OCS-P 0478	6B	48N 63W	All	5760.00	06/07/84	
OCS-P 0525	6B	48N 64W	All	5760.00		

BETA UNIT, SAN PEDRO BAY AREA, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-18481, Approved & effective 04/15/83
UNIT OPERATOR: Shell Western E & P, Inc., (SWEPI) - effective 08/11/87
Unocal for leases OCS-P 0296 and 0306
PLAN FILED IN: OCS-P 0296
STATUS: Producing

The Unit embraces 23,040 acres, more or less, comprised of the following 4 OCS leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0296	6C	34N 37W	All	5760.00	02/26/77	Edith
OCS-P 0300	6C	33N 37W	All	5760.00	06/02/77	Ellen / Elly
OCS-P 0301	6C	33N 36W	All	5760.00	09/28/76	Eureka
OCS-P 0306	6C	32N 36W	All	5760.00		

BONITO UNIT, SANTA MARIA BASIN, OFFSHORE CA.

DESIGNATED NO.: 14-08-1001-18489, Approved & effective 06/30/86
UNIT OPERATOR: Chevron U.S.A., Inc.
PLAN FILED IN: OCS-P 0443
STATUS: SOP approved to 12/31/89

The Unit embraces 33,135 acres, more or less, comprised of the following 8 leases & 1 unleased block:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0443	NI 10-6	374	All	5693.00	06/28/82	
OCS-P 0445	NI 10-6	418	All	5693.00		
OCS-P 0446	NI 10-6	419	All	5693.00	03/17/83	
OCS-P 0449	NI 10-6	463	All	5414.00	12/05/83	
OCS-P 0450	NI 10-6	464	W1/2 NW1/4	712.00	09/19/82	
OCS-P 0499	NI 10-6	329	SE 1/4	1423.00		
OCS-P 0500	NI 10-6	330	S 1/2	2847.00		
OCS-P 0510	NI 10-6	375	W 1/2	2847.00		
(Unleased)	NI 10-6	462	E 1/2	2813.00		

CASTLE ROCK UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.: 487001, Approved and effective 02/27/87
UNIT OPERATOR: Chevron U.S.A., Inc.
PLAN FILED IN: OCS-P 0321
STATUS: SOP approved to 12/31/89

The Unit embraces 11,520 acres, more or less, comprised of the following 2 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0321	6A	54N 83W	All	5760.00	01/09/84	
OCS-P 0324	6A	53N 83W	All	5760.00	08/08/81	

GATO CANYON UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.: 487004, Approved and effective 07/30/87
UNIT OPERATOR: Samedan Oil Corporation
PLAN FILED IN: OCS-P 460
STATUS: SOP approved to 07/31/91

The Unit embraces 10,101 acreas, more or less, comprised of the following 3 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 460	6A	53N 72W	All	3375.00	09/04/85	
OCS-P 462	6A	52N 72W	All	5760.00		
OCS-P 464	6B	53N 71W	All	966.00		

LION ROCK UNIT, SANTA MARIA BASIN, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-18488, Approved and effective 06/26/86
UNIT OPERATOR: Shell Western E & P, Inc. (effective 11/1/87)
PLAN FILED IN: OCS-P 0396
STATUS: SOP approved to 06/30/94

The Unit embraces 31,312 acres, more or less, comprised of the following 6 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0396	NI 10-3	946	All	5693.00	03/07/84	
OCS-P 0397	NI 10-3	947	All	5693.00	12/14/84	
OCS-P 0402	NI 10-3	990	All	5693.00		
OCS-P 0403	NI 10-3	991	All	5693.00	06/21/85	
OCS-P 0408	NI 10-6	21	All	5693.00	01/15/85	
OCS-P 0414	NI 10-6	65	E 1/2	2847.00		

MUSSEL ROCK UNIT, SANTA MARIA BASIN, OFFSHORE CA

DESIGNATED NO.: 489001, Approved and effective 01/31/89
UNIT OPERATOR: Texaco, Inc.
PLAN FILED IN: OCS-P 505
STATUS: SOO approved to 12/31/89

The Unit embraces 11,386 acres, more or less, comprised of the following 2 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 504	NI 10-3	992	All	5693.00		
OCS-P 505	NI 10-6	23	All	5693.00		

PITAS POINT UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA

DESIGNATED NO.: 14-08-0001-12370, approved 03/30/73, effective 03/31/73; amendment approved 04/01/82
UNIT OPERATOR: Texaco, Inc.
PLAN FILED IN: OCS-P 0233
STATUS: Producing

The Unit embraces 17,280 acres, more or less, comprised of the following 3 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0233	6B	50N 63W	All	5760.00		
OCS-P 0234	6B	50N 64W	All	5760.00	06/19/68	Habitat
OCS-P 0346	6B	50N 65W	All	5760.00	01/15/81	

POINT HUENEME UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.: 488001, Approved and effective 02/29/88
UNIT OPERATOR: Union Oil Company of California (UNOCAL)
PLAN FILED IN: OCS-P 0202
STATUS: Producing

The Unit embraces 13,648 acres, more or less, comprised of the following 3 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0202	6B	46N 58W	All	2824.00	06/19/69	Gina
OCS-P 0203	6B	46N 59W	All	5760.00	08/19/69	
OCS-P 0479	6B	47N 58W	All	5064.00	07/17/87	
		47N 59W	All			

POINT PEDERNALES UNIT, SANTA MARIA BASIN, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-18490, Approved and effective 09/16/86
UNIT OPERATOR: Union Oil Company of California (Unocal)
PLAN FILED IN: OCS-P 0437
STATUS: Producing

The Unit embraces 19,844 acres, more or less, comprised of the following 6 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0437	NI 10-6	287	S 1/2	2847.00	01/04/85	
OCS-P 0438	NI 10-6	288	S 1/2	2847.00		
OCS-P 0440	NI 10-6	331	All	5693.00	01/23/84	
OCS-P 0441	NI 10-6	332 & 333	All	4905.00	01/11/83	Irene
OCS-P 0444	NI 10-6	376	N 1/2	2129.00		
OCS-P 0510	NI 10-6	375	NE 1/4	1423.00		

POINT SAL UNIT, SANTA MARIA BASIN, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-18485, Effective 12/09/85, Approved 12/10/85
UNIT OPERATOR: Oryx Energy Company
PLAN FILED IN: OCS-P 0415
STATUS: SOP approved to 06/30/94

The Unit embraces 22,772 acres, more or less, comprised of the following 4 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0415	NI 10-6	66	All	5693.00	09/14/84	
OCS-P 0416	NI 10-6	67	All	5693.00	03/29/85	
OCS-P 0421	NI 10-6	110	All	5693.00		
OCS-P 0422	NI 10-6	111	All	5693.00	01/06/86	

PURISIMA POINT UNIT, SANTA MARIA BASIN, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-18487, Approved and effective 06/25/86
UNIT OPERATOR: Shell Western E &P, Inc. (effective - 10/14/87); expansion to include OCS-P 0435, approved 04/01/88
PLAN FILED IN: OCS-P 0426
STATUS: SOP approved to 06/30/94

The Unit embraces 22,031 acres, more or less, comprised of the following 4 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0426	NI 10-6	155	All	5693.00		
OCS-P 0427	NI 10-6	156	All	5548.00	01/24/84	
OCS-P 0432	NI 10-6	200 & 201	All	5097.00		
OCS-P 0435	NI 10-6	244	All	5693.00	08/15/85	

ROCKY POINT UNIT, SANTA MARIA BASIN, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-18484, Approved 02/15/85
UNIT OPERATOR: Chevron U.S.A., Inc.
PLAN FILED IN: OCS-P 0317
STATUS: SOP approved to 06/30/90

The Unit embraces 17,284 acres, more or less, comprised of the following 7 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0317	6A	55N 83W	All	4087.00	05/09/81	
OCS-P 0318	6A	55N 82W	All	1430.00	04/10/81	
OCS-P 0447	NI 10-6	420	NE 1/4	1357.00		
OCS-P 0448	NI 10-6	421	All	1825.00		
OCS-P 0451	NI 10-6	465	E 1/2	2385.00	02/22/83	
OCS-P 0452	NI 10-6	466	All	4016.00	05/14/83	
OCS-P 0453	NI 10-6	467	All	2184.00		

SANTA CLARA UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-12369, Approved 03/30/73, Effective 03/31/73, Approved Amendment 03/31/89
UNIT OPERATOR: Chevron U.S.A., Inc.
Unocal for lease OCS-P 0216
PLAN FILED IN: OCS-P 0204
STATUS: Producing

The Unit embraces 46,080 acres, more or less, comprised of the following 8 OCS leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0204	6B	46N 60W	All	5760.00	03/02/79	
OCS-P 0205	6B	46N 61W	All	5760.00	11/22/70	Gail
OCS-P 0208	6B	47N 60W	All	5760.00		
OCS-P 0209	6B	47N 61W	All	5760.00		
OCS-P 0210	6B	47N 62W	All	5760.00		
OCS-P 0215	6B	48N 60W	All	5760.00	08/05/73	
OCS-P 0216	6B	48N 61W	All	5760.00	03/04/71	Gilda
OCS-P 0217	6B	48N 62W	All	5760.00	03/12/75	Grace

SANTA MARIA UNIT, SANTA MARIA BASIN, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-18486, Approved and effective 06/11/86
UNIT OPERATOR: Shell Western E & P, Inc. (SWEPI), effective 02/06/87
PLAN FILED IN: OCS-P 0420
STATUS: SOP approved to 06/30/94

The Unit embraces 37,004 acres, more or less, comprised of the following 8 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0420	NI 10-6	109	All	5693.00		
OCS-P 0424	NI 10-6	153	All	5693.00		
OCS-P 0425	NI 10-6	154	All	5693.00		
OCS-P 0429	NI 10-6	197	NE 1/4	1423.00		
OCS-P 0430	NI 10-6	198	All	5693.00		
OCS-P 0431	NI 10-6	199	All	5693.00		
OCS-P 0433	NI 10-6	242	NE 1/4	1423.00		
OCS-P 0434	NI 10-6	243	All	5693.00	08/04/86	

SANTA ROSA UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.: 14-08-0001-15444, Approved and effective 08/25/77
amended 07/01/80 and 03/05/86, effective 04/01/86
UNIT OPERATOR: Exxon Corporation*
PLAN FILED IN: OCS-P 0231, Amended 07/01/80, and 04/01/86
STATUS: SOP approved to 12/31/89

The Unit embraces 23,040 acres, more or less, comprised of the following 4 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0231	6B	49N 68W	All	5760.00		
OCS-P 0232	6B	49N 69W	All	5760.00	07/23/78	
OCS-P 0238	6B	50N 69W	All	5760.00	10/14/80	
OCS-P 0467	6B	50N 68W	All	5760.00	09/17/85	

* Sun Exp. and Prod. agent designated for portions of leases OCS-P 0231 & 0467.

SANTA YNEZ UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.:	14-08-0001-8979, Approved 12/02/70, amended and effective 10/01/82, 07/01/87, 06/20/88
UNIT OPERATOR:	Exxon Corporation
PLAN FILED IN:	OCS-P 0180
STATUS:	Producing

The Unit embraces 97,437 acres, more or less, comprised of the following 20 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0180	6A	52N 74W	All	5760.00	10/04/71	
OCS-P 0181	6A	52N 75W	All	5760.00	12/21/71	
OCS-P 0182	6A	52N 77W	All	5760.00	05/02/70	Heritage
OCS-P 0183	6A	52N 78W	All	5760.00	05/31/71	
OCS-P 0184	6A	52N 79W	All	5760.00		
OCS-P 0185	6A	52N 80W	All	5760.00		
OCS-P 0187	6A	53N 73W	All	4946.00	09/23/83	
OCS-P 0188	6A	53N 74W & 54N 74W	All	5681.00	07/13/69	Hondo
OCS-P 0189	6A	53N 75W & 54N 75W	N 1/2	3840.00		
OCS-P 0190	6A	53N 75W	S 1/2	2880.00	07/20/69	Harmony
OCS-P 0191	6A	53N 76W		5760.00	03/08/71	
OCS-P 0192	6A	53N 77W & 54N 77W	N 1/2	3851.00		
OCS-P 0193	6A	53N 78W & 54N 78W	N 1/2	3316.00	09/22/70	
OCS-P 0194	6A	53N 78W	S 1/2	2880.00	08/30/70	
OCS-P 0195	6A	53N 79W & 54N 79W		5695.00		
OCS-P 0196	6A	53N 80W		4735.00		
OCS-P 0197	6A	53N 81W & 54N 81W		4893.00	08/19/68	
OCS-P 0326	6A	53N 77W		2880.00	04/01/82	
OCS-P 0329	6A	52N 76W		5760.00		
OCS-P 0461	6A	52N 73W	All	5760.00		

SMUGGLERS COVE UNIT, SANTA BARBARA CHANNEL, OFFSHORE CA.

DESIGNATED NO.:	487003, Approved and effective 07/14/87, amended (expansion) and effective 11/21/89
UNIT OPERATOR:	Atlantic Richfield Company (ARCO)*
PLAN FILED IN:	OCS-P 0469
STATUS:	SOP approved to 07/31/90

The Unit embraces 24,480 acres, more or less, comprised of the following 5 leases & 1 unleased block:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0469	6B	49N 67W	All	5760.00	02/05/87	
OCS-P 0475	6B	48N 66W	N 1/2	2880.00		
OCS-P 0522	6B	49N 66W	All	5760.00		
(Unleased)	6B	48N 67W	NE 1/4	1440.00		
OCS-P 0523	6B	49N 65W	S 1/2	2880.00		
OCS-P 0524	6B	48N 65W	All	5760.00		

* Conoco is designated agent for exploratory operations on leases OCS-P 0475 and 0522.
Texaco is designated agent for leases OCS-P 0523 and 0524.

SWORD UNIT, SANTA BARBARA CHANNEL, OFFSHORE, CA.

DESIGNATED NO.:	14-08-0001-18482, Approved 07/13/84, (Joinder effective 08/01/84)
UNIT OPERATOR:	Conoco, Inc.
PLAN FILED IN:	OCS-P 0319
STATUS:	SOP approved to 06/30/94

The Unit embraces 12,240 acres, more or less, comprised of the following 4 leases:

LEASE NO.	MAP NO.	BLOCK NO.	DESCRIPT.	ACREAGE	DISC. DATE	PLATFORM
OCS-P 0319	6A	54N 85W	SE 1/4, S 1/2 NE 1/4	2160.00		
OCS-P 0320	6A	54N 84W	S 1/2 NW 1/4, SW 1/4 NE 1/4, W 1/2 SE 1/4, SW 1/4	3240.00	05/23/85	
OCS-P 0322	6A	53N 85W	E 1/2, SW 1/4, S 1/2 NW 1/4	5040.00	02/17/83	
OCS-P 0323	6A	53N 84W	NW 1/4, NW 1/4 SW 1/4	1800.00		

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Appendix D: Offshore California at a Glance as of November 30, 1989

UNIT/(field)	UNIT/(Platform) Operator	No. of Leases/ in Unit	Date of Unit Approval	Status	Existing Platforms	Installation Date (Actual)	1988 Daily Production (Mbbl/MMcf)
FEDERAL WATERS							
ANACAPA	CHEVRON	5	05/22/87	Nonproducing			
BETA	SWEPI	4	04/15/83				
(Beta)	(SWEPI)			Processing	Elly	1980	
	(SWEPI)			Producing	Ellen	1980	5.5/1.3
	(SWEPI)			Producing	Eureka	1984	9.9/1.7
(Beta Northwest)	(Chevron)			Producing	Edith	1983	.96/.57
BONITO	CHEVRON	9	06/30/86	Nonproducing			
(Bonito)							
(Electra)							
(Unnamed 443)							
(Carpinteria)	(Sun)			Producing	Henry	1979	3.8/1.8
	(Phillips)			Producing	Hogan	1967	.48/.54
	(Phillips)			Producing	Houchin	1968	1.5/1.8
CASTLE ROCK	CHEVRON	2	02/27/87	Nonproducing			
(Dos Cuadras)	(Sun)			Producing	Hillhouse	1969	3.0/2.2
	(Unocal)			Producing	A	1968	4.5/2.5
	(Unocal)			Producing	B	1968	3.2/2.3
	(Unocal)			Producing	C	1977	1.5/.68
PT. HUENEME	(Unocal)	3	02/29/88	Producing	Gina	1980	1.6/.40
GATO CANYON	SAMEDAN	3	07/30/87	Nonproducing			
LION ROCK	SWEPI	6	06/26/86	Nonproducing			
MUSSEL ROCK	TEXACO	2	01/31/89	Nonproducing			
PITAS POINT	TEXACO	3	03/30/73	Producing	Habitat	1981	.04/45.[illegible]
(Point Arguello)	(Chevron)			Development	Hidalgo	1986	
	(Chevron)			Development	Hermosa	1985	
	(Texaco)			Development	Harvest	1985	
POINT PEDERNALE	UNOCAL	6	09/16/86	Producing	Irene	1985	17.0/3.4
POINT SAL	ORYX	4	12/10/85	Nonproducing			
PURISIMA POINT	SWEPI	4	06/25/86	Nonproducing			
ROCKY POINT	CHEVRON	7	02/15/85	Nonproducing			
(Rocky Point)							
(Jalama)							
(San Miguel)	(SWEPI)			Permitting			
SANTA CLARA	CHEVRON	8	03/30/73				
(Santa Clara)	(Chevron)			Producing	Grace	1979	1.4/3.1
(Sockeye)	(Chevron)			Producing	Gail	1987	.60/1.2
(Santa Clara)	(Unocal)			Producing	Gilda	1981	5.1/7.7
SANTA MARIA	SWEPI	8	06/11/86	Nonproducing			
SANTA ROSA	EXXON	4	08/25/77	Nonproducing			
SANTA YNEZ	EXXON	20	12/02/70				
(Hondo)				Producing	Hondo	1976	27.0/57.5
					Harmony (1)	1989 (1)	
(Sacate)							
(Pescado)					Heritage (1)	1989 (1)	
(Gov't Point)							
SMUGGLER'S COVE	ARCO	6	07/14/87	Nonproducing			
SWORD	CONOCO	4	07/13/84	Nonproducing			

UNIT/(field)	Proposed Platforms	Installation Date (Proposed)	Projected Peak Production Oil/gas (Mbpd/MMcfd)[Year]	Treatment Facilities (Proposed)	Post-Treatment Crude Oil Destination (Proposed)
FEDERAL WATERS					
ANACAPA					
BETA					
(Beta)				Long Beach	Pipeline to Long Beach Harbor
				Long Beach	
				Long Beach	
(Beta Northwest)				Huntington Beach	
BONITO					
(Bonito)					
(Electra)					
(Unnamed 443)					
(Carpinteria)				Rincon	
				La Conchita	Pipeline to Wilmington
				La Conchita	
CASTLE ROCK					
(Dos Cuadras)				Rincon	
				Rincon	
				Rincon	
				Rincon	
PT. HUENEME				Mandalay	
GATO CANYON					
LION ROCK					
MUSSEL ROCK					
PITAS POINT				Carpinteria	
(Point Arguello)			(20/10)[1993/1997]	PAPCO/GGPC	(GIMT or All-American/SCPS
			(27/28)[1990/1996]	PAPCO/GGPC	(GIMT or All-American/SCPS
			(40/12)[1989/1989]	PAPCO/GGPC	(GIMT or All-American/SCPS
POINT PEDERNALE	Iris	1991	(20/13.3)	Lompoc	Santa Maria refinery
POINT SAL					
PURISIMA POINT					
ROCKY POINT					
(Rocky Point)	Hacienda	1994		PAPCO/GGPC	(All-American/SCPS)
(Jalama)					
(San Miguel)	Julius	1988/1991	(40)	Undetermined	(All-American to TX)
SANTA CLARA					
(Santa Clara)				Carpinteria	
(Sockeye)			(13.3)	Carpinteria	Pipeline to Los Angeles
(Santa Clara)				Mandalay	
SANTA MARIA					
SANTA ROSA					
SANTA YNEZ					
(Hondo)				OS&T(oil)/POPCO(gas)	Tanker to Texas
				(Las Flores Canyon)(2)	(All-American/tanker to Texa
(Sacate)	Heather	1994		(Las Flores Canyon)	
(Pescado)				(Las Flores Canyon)	
(Gov't Point)					
SMUGGLER'S COVE					
SWORD					

UNIT/(field)	UNIT/(Platform) Operator	No. of Leases/ Blocks	Date of Unit Approval or (Field Discovery)	Status	Existing Platforms	Installation Date (Actual)	1988 Daily Production (Mbbl/MMcf)
STATE WATERS							
(Alegria Offshore)	.ARCO	1		Producing	Subsea completions..		.11/.10
(Belmont Offshore)	Exxon			Producing	Belmont Island	1948	.89/.11
(Capitan)	Unocal	1		Abandoned			
(Carpinteria Offshore)	Chevron			Producing	Heidi	1965	
					Hope	1964	2.0/4.6
(Coal Oil Point Offshore)	ARCO			Denied (3)			
(Conception Offshore)	Texaco			Removed	Herman(4)	1963	abandoned
(Cuarta Offshore).	Texaco	1		Removed	Helen(4)	1960	abandoned
(Ellwood)	ARCO			Producing	Onshore wells		.90/.06
(Embarcadero)	ARCO			Permitting			
(Government Point)	..Unocal	1		Withdrawn (5)			
(Huntington Beach. Offshore)	SWEPI	6		Producing	Emmy	1961	9.8/1.9
	Unocal	2		Producing	Eva	1964	
(Molino Offshore).	Shell	1		Withdrawn (5)	Subsea completions..		.03/2.5
	Phillips	1		Producing	Subsea completions..		/.005
(Newport, West Offshore)							.15/.05
(Pt. Conception Offshore)	Unocal	1		Producing	Onshore wells		.11/.03
(Rincon Offshore).	Norris Oil	2		Producing	Rincon Island	1957	.55/.60
(South Ellwood Offshore)	ARCO	5		Producing/ Permitting	Holly	1966	7.0/6.0
(Summerland Offshore)	Chevron	1		Producing	Hilda	1960	.53/1.1
					Hazel	1957	
(Torrance Offshore)	Redondo Beach. Hermosa Beach						.13/.30
(Venice Beach Offshore)							.05/.05
(West Montalvo)	Chevron	1					.23/.15
(Wilmington)	THUMS Tract			Producing	THUMS Islands:		54.9/11.7
					Chaffee	1964	
					Freeman	1964	
					Grissom	1964	
					White	1964	
	Chevron			Producing	Esther	1964/1986	

UNIT/(field)	Proposed Platforms	Installation Date (Proposed)	Projected Peak Production Oil/Gas (Mbpd/MMcfd)[Year]	Treatment Facilities (Proposed)	Post-Treatment Crude Oil Destination (Proposed)
STATE WATERS					
(Alegria Offshore)				Gaviota (Arco)	Gas sold to SoCal
(Belmont Offshore)				Seal Beach	Local Distribution
(Capitan)					
(Carpinteria				Carpinteria	Pipeline to Los Angeles
Offshore)				Carpinteria	
(Coal Oil Point	Heron	Denied (3)	(43/39)	(Ellwood-Oil	
Offshore)				Las Flores-Gas)	(GIMT or All-American/SCPS
(Conception				Gaviota	All-American
Offshore)					
(Cuarta Offshore).				Gaviota	All-American
(Ellwood)				Dos Pueblos	Barge to L. A. or S. F.
(Embarcadero)	Haven	Denied (3)	(27/82)[1995/1997]	(Ellwood/Las Flores)	(GIMT or All-American/SCPS
(Government Point)	Hayley	Withdrawn (5)	(15/6-7)	(Lompoc or PAPCO/GGPC)	(All-American or Santa Maria refinery)
(Huntington Beach				Huntington Beach	Local distribution
Offshore)				Huntington Beach	Local distribution
(Molino Offshore).	Hercules.	Withdrawn (5)	(30/80-100)	(Canada de la Huerta	
				or PAPCO/GGPC)	(GIMT or All-American/SCPS
				Tajiguas	Gas sold to SoCal
(Newport, West					
Offshore)					
(Pt. Conception				Government Point	Barge to Los Angeles
Offshore)					
(Rincon Offshore).				Rincon	Pipeline to Los Angeles
(South Ellwood	Holly B	Denied (3)	(13.2/34)[1996/1998].	(Ellwood-Oil	Barge to L. A. or S. F.
Offshore)				Las Flores-Gas)	(GIMT or All-American/SCPS
(Summerland				Carpinteria	Pipeline to Los Angeles
Offshore)				Carpinteria	Pipeline to Los Angeles
(Torrance					
Offshore)					
(Venice Beach					
Offshore)					
(West Montalvo)					
(Wilmington)					
				Long Beach	Local Distribution
				Long Beach	Local Distribution
				Long Beach	Local Distribution
				Long Beach	Local Distribution
				Seal Beach	Local Distribution

NOTE: Leases included in Federal units may contain whole blocks or portions thereof. See Plate for geographic extent of unit boundaries.

(1) Harmony jacket installed 6/89; Heritage jacket installed 10/89; topside modules installed 1991; production in 1992.
(2) Currently under construction.
(3) State Lands Commission/Santa Barbara County denied project; currently in litigation.
(4) State Platforms Helen and Herman were removed on 5/30/88 and 7/27/88.
(5) Shell has withdrawn its application for Hercules.

ABBREVIATIONS:

GGPC - Gaviota Gas Processing Company
GIMT - Gaviota Interim Marine Terminal
OS&T - Exxon's Offshore Storage and Treatment vessel
PAPCO - Point Arguello Pipeline Company
POPCO - Pacific Offshore Pipeline Company
SCPS - Southern California Pipeline System
SoCal - Southern California
SWEPI - Shell Western Exploration & Production, Inc.
THUMS - Texaco, Humble, Union, Mobil, and Shell
UNOCAL- Union Oil Company of California

SOURCES: State production data - California Department of Conservation/Division of Oil and Gas

OCS Information Program Publication Staff

Program Coordinator

Douglas L. Slitor	(703) 787-1030

Author/Technical Coordinator

Douglas L. Slitor	(703) 787-1030

Supporting Authors

Jeffrey D. Wiese	(703) 787-1032
Robert M. Karpas	(703) 787-1027

Editor/Production Supervisor

Mary J. Davis	(703) 787-1028

Technical Support

Mary Beth Barbagallo	(703) 787-1034

Production Support

Dayle Grover	(703) 787-1032

Distribution

Peggie Russell	(703) 787-1080

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381 Elden Street
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